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Rev. 07/10/02

17503

K.7

ENVIRON

April 16, 1999

Mr. Michael McAteer
USEPA, HSRW-6J
77 West Jackson Blvd.
Chicago, IL 60604-3590

Re: Compliance Well Installation and
Fourth Quarter 1998 Surface and Subsurface Water Monitoring Report
Enviro-Chem Site
Zionsville, Indiana

Dear Mr. McAteer:

This report summarizes the installation of the Compliance Monitoring Wells and presents the results of the initial monitoring of the Compliance Monitoring Wells and the Unnamed Ditch at the Enviro-Chem Site in Zionsville, Indiana during the fourth quarter of 1998.

The specific tasks completed during this quarter included:

- Collection of water level measurements from the 15 compliance monitoring wells on November 9, 1998;
- Sampling of the 4 on-site till monitoring wells, 6 off-site till monitoring wells, the 5 off-site sand/gravel wells, ECC MW-13 and 3 surface water locations at the Unnamed Ditch during the week of November 9, 1998; and
- Analysis of the surface and subsurface water samples for parameters specified in the Revised Remedial Action, Exhibit A dated May 7, 1997 (Revised Exhibit A).

650 Dundee Road • Suite 150 • Northbrook, Illinois 60062 • USA • Tel: (847) 753-9900 • Fax: (847) 753-9420 • www.environcorp.com

I. COMPLIANCE MONITORING WELL INSTALLATION

A. Installation Procedures

Thirteen of the fifteen proposed compliance monitoring wells were installed in April and May of 1998 by Environmental Drilling and Contracting (EDAC) of Holland Michigan, under the supervision of an ENVIRON geologist. The other two wells, T-1 and T-5 were installed in November 1997 by American Environmental Drilling under the supervision of an ERM geologist.

The number and locations of the wells were specified in Revised Exhibit A and the locations are shown on Figure 1. The methods of well installation construction and completion were also detailed in Revised Exhibit A.

Of the fifteen proposed compliance monitoring wells, four wells (T-1 to T-4) were located within the exclusion zone (on-site) and were screened within the till unit and 6 wells (T-5 to T-10) were located outside the exclusion zone (off-site) and were also screened within the till unit. The remaining five monitoring wells (S-1 to S-4, and Piezometer-1) were located off-site and were screened within the sand/gravel zone that is located below the till unit.

The well depths and screen lengths were determined in the field based upon results of field sampling during the installation of pilot holes. The soil descriptions for each of the well locations are summarized on Geologic Drill Logs, which are included in Appendix A. The depths of the geologic units have been recorded from the elevation of the ground surface prior to the placement of the south pad soils and the cap.

Well Construction Logs for each of the new wells (and the piezometer) are presented in Appendix A. In general, 2 inch diameter wells were installed consisting of 3.5 to 28.4 feet of PVC well screen (0.0010'' or 0.0020'' slot size) and then PVC riser pipe to the ground surface. The well construction logs provide the screen, sand, casing, bentonite seal, and grout depths for each well. The recorded depths have been stated relative to the present ground surface recorded following the placement of the south pad soils and the cap.

The following changes were made to the design of the Compliance Monitoring Wells during their installation. During the drilling of the T-6 and T-7 pilot holes, evidence of possible soil contamination was observed in the upper 7 to 8 feet. As a result, construction techniques similar to those used for on-site till well were used. An outer steel casing was installed prior to drilling the bore holes for the T-6 and T-7 monitoring wells. The steel casing was set from 0 to 9 feet below ground surface (bgs) to protect the deeper portion of the till zone from any overlying contamination. Also, a 2 to 5-foot thick bentonite slurry was used in place of a 1-foot hydrated bentonite pellet seal in 3 of the wells (S-1, S-4, and Piezometer-1). In four other wells (S-2, S-3, S-4A, and S-4D), a 2 to 2.5-foot thick hydrated bentonite pellet seal was used instead of a 1-foot thick hydrated bentonite pellet seal. Due to geologic and/or drilling conditions at these locations, the 1-foot bentonite seal either could not be installed or was not sufficient in acting as a seal.

B. Monitoring Well Replacements

Post installation measurements of the sand/gravel well S-4 indicated that the screened interval was not set deep enough. The well had been screened from 19 feet to 39 feet bgs while the sand unit extended from 19.6 feet to 45.3 feet bgs. There was approximately 6 feet between the bottom of the S-4 well and the bottom of the sand unit. On May 12, 1998 a second well was installed, adjacent to S-4, and screened from 38 feet to 48 feet bgs. During the installation of the second well, split spoon samples were collected to confirm the depth of the base of the sand unit. The new well installed adjacent to S-4 was designated S-4D.

During the placement of the soil cap at the north end of the site the S-4 well was hit by a bulldozer and the flushmont cover was destroyed. The top of the well was temporarily repaired however, during the initial ground water monitoring event in November, it was discovered that the bottom of the well contained a significant amount of sediment. Since it was likely that the well probably collapsed at some point along it's casing, it was decided that the entire well would be replaced. During replacement of the S-4 well on December 11, 1998 a decision was made to reinstall this well according to the original specification and abandon both the S-4 and S-4D wells. The new well at this location has been designated S-4A and the well construction log is included in Appendix A.

The on-site till well T-4 was also damaged during the placement of the soil cap. Due to the extent of the damage to the well, it was decided that the well would be abandoned and a second well would be installed to the same specifications as the first. This new well was installed on October 24, 1998 and designated T-4A.

II. GROUND WATER MONITORING

A. Ground Water Flow Determination

1. Data Collection

On November 9, 1998, the depth-to-ground water was measured at the 4 on-site till zone monitoring wells, the 6 off-site till zone monitoring wells and the 5 off-site sand/gravel zone monitoring wells using an electronic water level meter. In addition, the ground water level in Piezeometer-1 was obtained. Measurements were recorded to the nearest 0.01 foot. The depth-to-ground water measurements and the corresponding ground water elevation data derived from these measurements are presented in Table 1.

2. Groundwater Elevation Data

The ground water elevations and contours for the till zone at the site are provided in Figure 2. The ground water contours, based on the off-site till wells, suggest that the direction of ground water flow in the vicinity of the site is to the east and northeast. The ground water elevation at the on-site till wells have not been calculated. The ground water elevations and contours for the sand/gravel zone at the site are provided in Figure 3.

B. Subsurface Water Sampling

As part of the initial sampling of the compliance monitoring program, 27 ground water samples (including duplicates) were collected from the Compliance Monitoring Wells (T-1 through T-10, S-1 through S-4, and S-4D) and ECC MW13 on November 9 through 12, 1998. Samples were collected as described in Section 6.3 of the Revised Remedial Action Field Sampling Plan Revision 4 dated 4/28/98 (FSP) with the following alterations.

In accordance with the FSP, the monitoring wells were purged a minimum of three well volumes of water or until the wells went dry, prior to sampling. The water in the till wells and ECC MW13 was evacuated using a dedicated disposable bailer. Due to the poor recovery of some of the till wells (T-3, T-4A, T-5, and T-8), the samples from these wells were collected over a period of 1 to 4 days. For all the till wells the volatile organic compounds (VOC) and Chromium VI samples were collected as soon as possible on the

day of purging, in order to prevent the volatilization and the degradation of the samples. The ground water samples were collected from the till wells and ECC MW13 using dedicated, decontaminated Teflon bailers.

The water in the sand/gravel well S-1 was purged using a peristaltic pump and dedicated polyethylene tubing. The intake for the polyethylene tubing was placed at the bottom of the screened interval. The ground water sample was collected from the bottom of the well with the peristaltic pump and tubing.

The metals and polychlorinated biphenyls (PCBs) samples were filtered using a 0.45 micron filter in accordance with the Section 6.3 of the FSP. All of the cyanide samples were mistakenly filtered with the exception of the samples from the sand/gravel wells S-1, S-2, S-3, and S-4.

Field measurements of pH, temperature, specific conductivity, and dissolved oxygen were collected at various times during the purging procedure. Field indicator parameters and other information recorded during well purging and sampling are provided in Appendix B.

C. Surface Water Sampling

Surface water samples were collected from 2 locations along Unnamed Ditch (SW-1 and SW-2) that is located east of the site. Samples were not collected from the NSL-1 location since water was not flowing from the North Side Landfill discharge to the Unnamed Ditch during the sampling events. The surface sample locations are shown on Figure 1. Samples were collected as described in Section 6.3 of the FSP with the following alterations.

The metals, cyanide and PCB surface water samples were mistakenly filtered during the November and December sampling events. The FSP only specifies that the subsurface samples be filtered.

Field measurements of pH, temperature, specific conductivity, and dissolved oxygen were collected from a sample of the water taken from the stream. Field indicator parameters and the rain accumulation measurement recorded during the storm proceeding the surface water sampling are provided in Appendix B.

D. Sample Designation

A sample identification number was designated to each sample collected as specified in Section 5.0 of the FSP. The sample identification is made up of the following sequential information:

- Name of Site – Enviro-Chem (EC)
- Sample Matrix – TGW indicates a ground water samples from a till well and SGW indicates a ground water samples from a sand/gravel well. The surface water samples are represented by SW.
- Well or surface water location number.
- Sample round; and
- Quality Assurance/Quality Control (QA/QC) Modifiers – Field Blank (B), field duplicate (D), and matrix spike/matrix spike duplicate (M).

For example, a sample from the sand/gravel monitoring well 1 collected during the first round of ground water sampling, would be designated ECSGW1-01. A field duplicate of the same sample would be designated ECSGW1-01-D.

E. Sample Analysis and Results

Following ground water sample collection, the samples were placed in a cooler with ice. At the end of each day, the sample coolers were shipped directly to the laboratory. Appropriate chain-of-custody protocols were followed throughout sample handling. CompuChem of Cary, North Carolina provided the analytical services.

Surface and subsurface water samples were analyzed for the parameters listed in Table 3-1 of Revised Exhibit A in accordance with the analytical methods summarized in Table 7-1 of the FSP. Analytical results for the on-site subsurface samples are summarized in Table 2 and the analytical results for off-site subsurface and surface water samples are summarized in Table 3. Appendix C contains the full analytical results for all the surface, subsurface, and the quality assurance and quality control samples.

F. Quality Assurance and Quality Control Procedures

To monitor the effectiveness of decontamination procedures, ENVIRON collected field blanks by pouring deionized water through a decontaminated Teflon bailer into a sample container or by pumping deionized water through the peristaltic pump and tubing into a sample container for the metals, PCB, and cyanide samples, the field blank water

was also passed through a .45 micron filter. A total of 2 field blanks were collected and analyzed. The laboratory supplied 2 trip blanks to monitor possible contamination from sample handling, transport, and storage. The trip blanks accompanied the samples and were analyzed for the VOCs listed in Table 3-1 of Revised Exhibit A.

Methylene chloride, a common laboratory contaminant, was detected at low concentrations in the two field blanks and the two trip blanks collected during the fourth quarter sampling event. The concentration of methylene chloride in the field and trip blanks corresponds to the minimum concentration of methylene chloride detected in all surface and subsurface water samples. ENVIRON believes the laboratory was a source of the methylene chloride detected these samples.

In addition to methylene chloride, acetone, tetrachloroethene, toluene and trichloroethene were detected in at least one of the trip blanks or field blanks. All three compounds have appeared in at least one of the laboratory method blanks, indicating that they are also laboratory contaminants.

To evaluate the reproducibility of results, ENVIRON collected duplicate surface and subsurface water samples. One duplicate sample was collected for every 20 samples. The duplicate ground water samples were collected by pouring the ground water from the bailer into two sets of sample containers or by pumping the ground water into two sets of sample containers. The duplicate surface water sample was collected at the same time as the sample it was duplicating. The results of the duplicate samples are summarized in Table 4. In addition to the duplicate samples, ENVIRON collected extra sample volume from 5 percent of the wells for the laboratories matrix spike and matrix spike duplicate (MS/MSD) samples. Two of these samples (ECSGW1-01 M and ECSGW2-01 M) were mistaken as duplicate samples rather than MS/MSD samples. The analytical results for these two additional duplicate samples have been summarized in Table 4. The results for each sample in the duplicate pairs were similar, indicating good reproducibility of the sampling and analytical methods.

If you have any questions about this letter or any other aspects of the project, please do not hesitate to contact us.

Sincerely,

ENVIRON International Corp.

Scott C. Hayter

Scott C. Hayter
Associate

Ronald E. Hutchens
Principal

cc: Mr. Roy Ball – ENVIRON International Corp.
Mr. Norman Bernstein – Bernstein & Associates
Mr. Mark Dowiak – Radian
Mr. Vince Epps – IDEM
Mr. Tim Harrison – CH2M Hill

TABLES

TABLE 1
Ground Water Elevations: November 9, 1998
Compliance Monitoring Wells

Well Number	Top of Casing Elevation (feet AMSL)	Depth-to-Water (feet)	Ground Water Elevation (feet AMSL)
T-1	No Data	20.53	--
T-2	No Data	20.95	--
T-3	No Data	14.12	--
T-4A	No Data	18.93	--
T-5	889.08	11.09	877.99
T-6	891.76	12.89	878.87
T-7	891.02	12.35	878.67
T-8	888.88	10.42	878.46
T-9	882.08	3*	--
T-10	889.42	8.19	881.23
S-1	890.27	11.29	878.98
S-2	888.46	9.84	878.62
S-3	882.45	4.46	877.99
S-4	889.45	10.9	878.55
S-4D	No Data	14.05	--
P-1	889.66	10.98	878.68
MW-13	883.3	No Data	--

Notes:
AMSL - Above Mean Sea Level.
* - Surface water entered the well prior to collecting the depth-to-water measurement, artifically rasing the water level.

TABLE 2
Summary of Analytical Results for Ground Water Samples
Enviro-Chem *On-Site* Monitoring Wells
Fourth Quarter 1998

Parameter Detected		Well No. T-1	T-2	T-3	T-4A
Votatile Organics					
Vinyl Chloride	*[2]*	--	--	280	--
Methylene Chloride	*[4.7]*	--	12000B	270B	--
1,2-Dichloroethene(total)	*[70]*	--	--	5200	--
Tetrachloroethene	*[0.69]*	--	17000	--	4
Toluene	*[2000]*	--	3600	--	--
1,1,1-Trichloroethane	*[200]*	--	21000	--	--
Trichloroethene	*[5]*	--	6000	--	--
Methyl isobutyl ketone	*[1,750]*	--	2700J	--	--
Methyl ethyl ketone	*[170]*	--	2200J	--	--
Semi-Volatile Organics					
Bis (2-ethylhexyl) phthalate	*[2.5]*	--	1300	29	5J
1,2-Dichlorobenzene	*[600]*	--	6900	--	--
Isoporone	*[8.5]*		390J	--	--
Polychlorinated biphenyls	*[0.0045]*	--	--	--	--
Inorganics		--	--	--	--

Notes:

All concentrations are in ug/L.

[2] = Acceptable Groundwater Concentration from Revised Exhibit A, Table 3-1.

-- = Not detected above Acceptable Subsurface Water Concentration.

B = Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic).

J = Estimated Value.

TABLE 3
Summary of Analytical Results for Ground Water Samples
Enviro-Chem *Off-Site* Monitoring Wells and Surface Sampling Points
Fourth Quarter 1998

Parameter Detected		Off Site Well No./ Sampling Point No.													
		T-5	T-6	T-7	T-8	T-9	T-10	S-1	S-2	S-3	S-4*	S-4D	MW13	SW-1	SW-2
Volatile Organics															
Methylene Chloride	*[15.7]*	--	970B	--	--	--	50B	-- / --	-- / --	-- / --	-- / --	--	--	--	-- / --
1,2-Dichloroethene(total)	*[1.85]*	--	20,000	23	10 B	--	930	-- / --	3	-- / --	-- / --	--	46	--	-- / --
Semi-Volatile Organics															
Bis (2-ethylhexyl) phthalate	*[50000]*	--	--	--	--	--	--	-- / --	-- / --	-- / --	-- / --	--	--	--	-- / --
1,2-Dichlorobenzene	*[763]*	--	--	--	--	--	--	-- / --	-- / --	-- / --	-- / --	--	--	--	-- / --
Phenol	*[570]*	--	870D	--	--	--	--	-- / --	-- / --	-- / --	-- / --	--	--	--	-- / --
Polychlorinated biphenyls	*[0.00079]*	--	--	--	--	--	--	-- / --	-- / --	-- / --	-- / --	--	--	--	-- / --
Inorganics															
Arsenic	*[0.0175]*	2.3B	25.9B	3.5B	--	--	6.9B	-- / --	-- / --	-- / --	-- / --	--	8.4B	--	-- / --

Notes:

All concentrations are in ug/L.

[15.7] = Acceptable Stream Concentration from Revised Exhibit A, Table 3-1.

-- = Not detected above Acceptable Stream Concentration.

B = Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic).

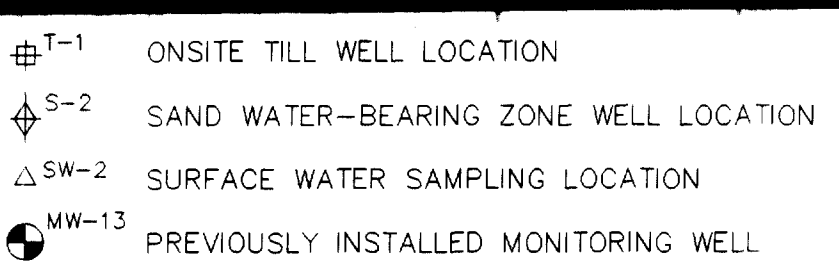
J = Estimated Value.

D = Compound quantitated on a diluted sample.

-- / -- = Duplicate water sample analyzed.

* Wells S-4 and S-4D later abandoned and replaced with well S-4A.

FIGURES



1 FIGURE

SUBSURFACE AND SURFACE WATER SAMPLING LOCATIONS

ENVIRO-CHEM SITE

ZIONSVILLE, INDIANA

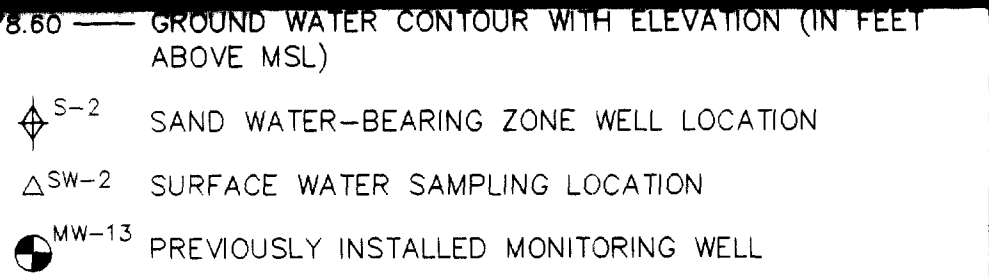
ENVIRON

650 DUNDEE ROAD, SUITE 150, NORTHBROOK, IL 60062

PRINCETON,NJ • ARLINGTON,VA • EMERYVILLE,CA • IRVINE,CA • NOVATO,CA
LOVELAND,OH • HOUSTON,TX • LONDON,UK • EDINBURGH,UK

12/21/98	1"=30'	216585AF02	4/16/99
DATE	SCALE	CADD FILE	PLOT DATE

S. HAYTER	H. ZUCZEK	R.HUTCHINS
DESIGNED BY	DRAFTED BY	APPROVED BY



2 FIGURE

GROUND WATER ELEVATION CONTOURS IN TILL ZONE • NOVEMBER, 1998

ENVIRO-CHEM SITE

ZIONSVILLE, INDIANA

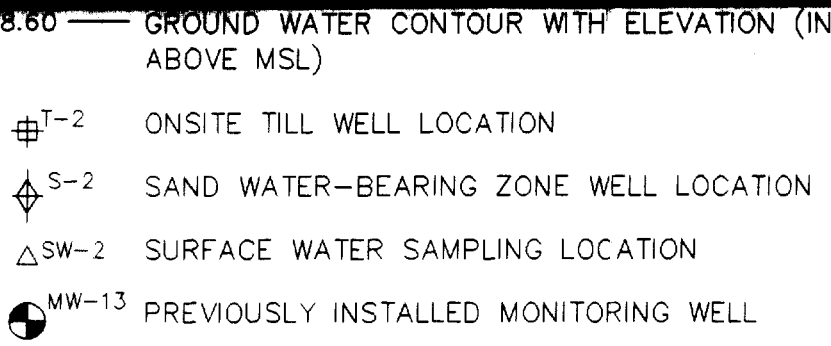
ENVIRON

650 DUNDEE ROAD, SUITE 150, NORTHBROOK, IL 60062

PRINCETON,NJ • ARLINGTON,VA • EMERYVILLE,CA • IRVINE,CA • NOVATO,CA
LOVELAND,OH • HOUSTON,TX • LONDON,UK • EDINBURGH,UK

12/21/98	1"=30'	6585AF03A	4/16/99
DATE	SCALE	CADD FILE	PLOT DATE

S. HAYTER	H. ZUCZEK	R.HUTCHINS
DESIGNED BY	DRAFTED BY	APPROVED BY



3 FIGURE	GROUND WATER ELEVATION CONTOURS IN SAND/GRAVEL ZONE NOVEMBER, 1998	ENVIRON		
		650 DUNDEE ROAD, SUITE 150, NORTHBROOK, IL 60062 PRINCETON,NJ • ARLINGTON,VA • EMERYVILLE,CA • IRVINE,CA • NOVATO,CA LOVELAND,OH • HOUSTON,TX • LONDON,UK • EDINBURGH,UK		
ENVIRO-CHEM SITE ZIONSVILLE, INDIANA		12/21/98 DATE	1"=30' SCALE	216585AF04A CADD FILE	4/16/99 PLOT DATE
		S. HAYTER DESIGNED BY	H. ZUCZEK DRAFTED BY	R.HUTCHINS APPROVED BY	

APPENDIX A

Geologic Drill Logs and Well Construction Logs

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-2**

TOTAL DEPTH: **25.3'**

PROJECT INFORMATION

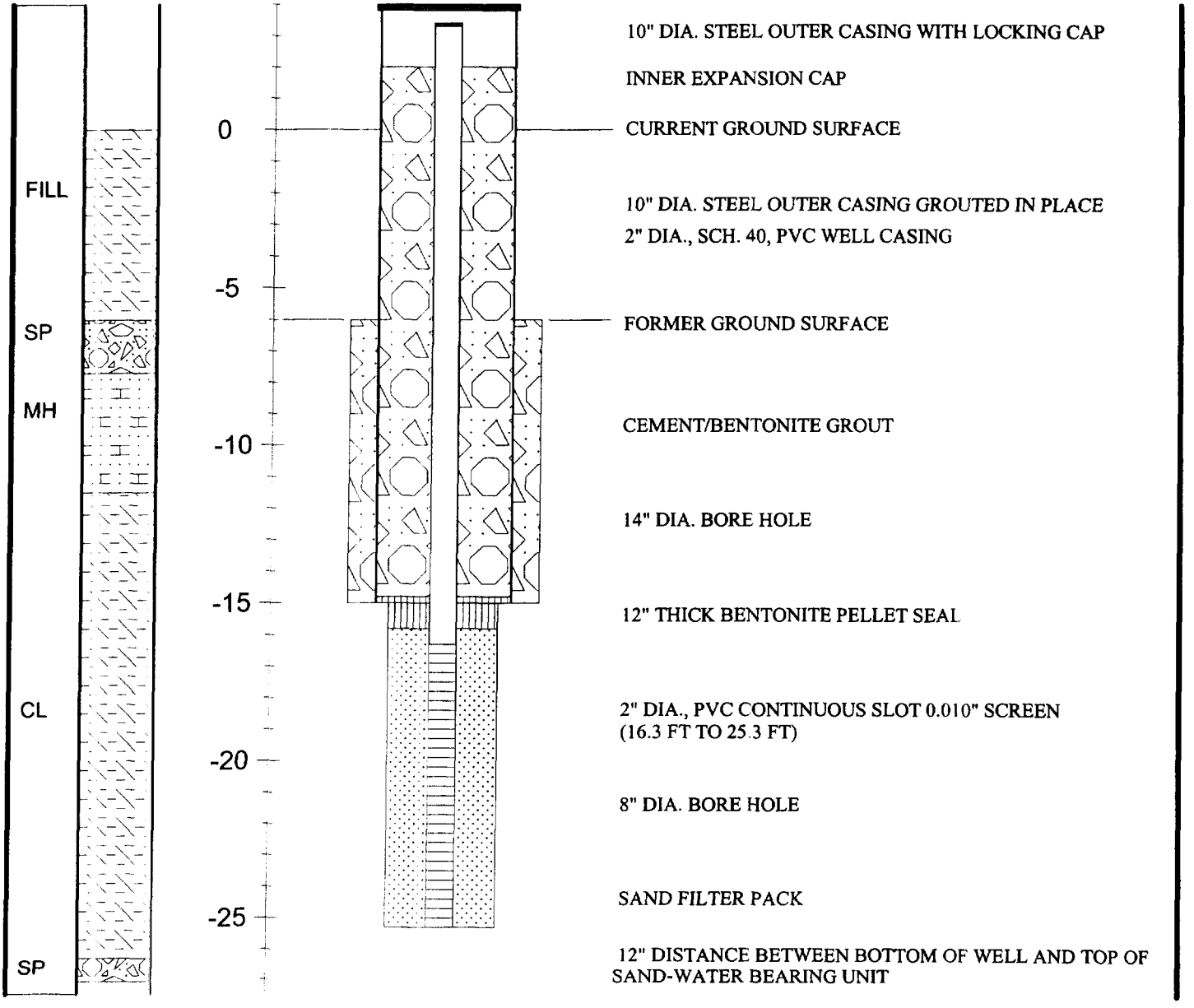
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**5-4-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **Not Surveyed**

SURVEY COORDINATES: **922129.89N 725743.47E**



ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-3**

TOTAL DEPTH: **29.0'**

PROJECT INFORMATION

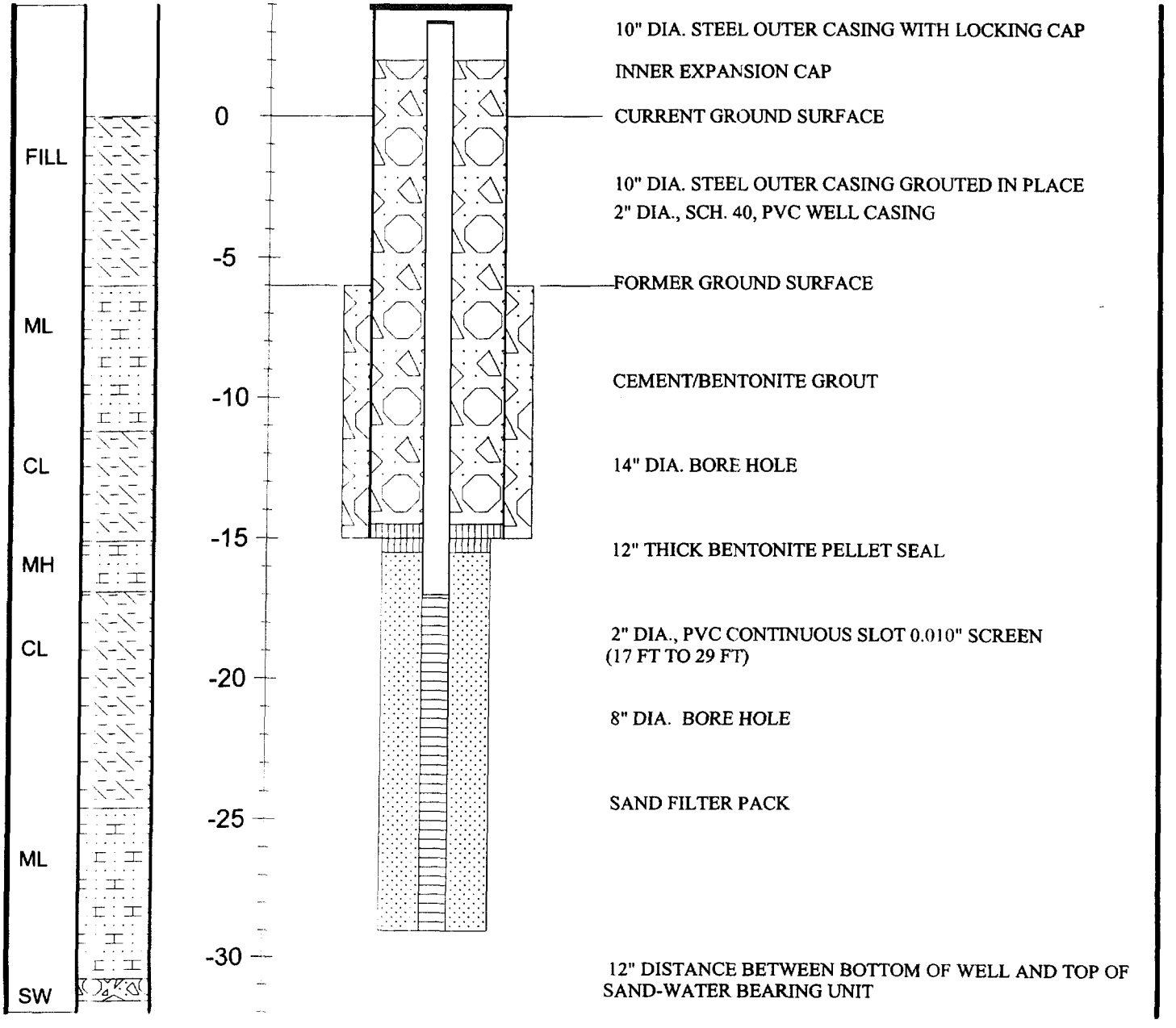
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**5-2-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **Not Surveyed**

SURVEY COORDINATES: **921924.40 N 725876.21E**



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650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-3**
TOTAL DEPTH: **25.6'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**5-1-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-2	1.0	2, 4, 5, 5	<1	0		ML		CLAYEY SILT: Brown clayey silt with a trace of fine gravel. Dry
2-4	1.6	4, 5, 6, 6	19					
4-6	1.6	3, 3, 4, 5	124	-5		CL	5.2	SILTY CLAY: Gray silty clay with a trace of fine gravel. Moist. Contains black staining and a chemical odor.
6-8	1.6	3, 2, 3, 3	1929					
8-10	1.2	2, 2, 4, 6	1284	-10		MH	9.1	CLAYEY SILT: Gray clayey silt with a trace of fine gravel. Moist
10-12	0.8	1, 1, 3, 4	107				10.9	SILTY CLAY: Gray silty clay with a trace of fine gravel. Moist.
12-14	1.0	1, 3, 3, 4	7			CL		
14-16	1.1	2, 2, 2, 3	29	-15				
16-18	1.0	1, 2, 3, 4	31					
18-20	0.6	1, 1, 4, 4	<1	-20		ML	18.6	CLAYEY SILT: Gray clayey silt with a trace of gravel. Moist.
20-22	1.1	3, 3, 3, 4	<1					
22-24	1.9	2, 2, 6, 16	<1					
24-26	1.7	2, 1, 1, 2	35	-25		SW	24.8	SAND WITH GRAVEL: Gray medium to coarse sand with some fine to medium gravel. Wet.

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-4A**

TOTAL DEPTH: **24.5'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**10-23-98**

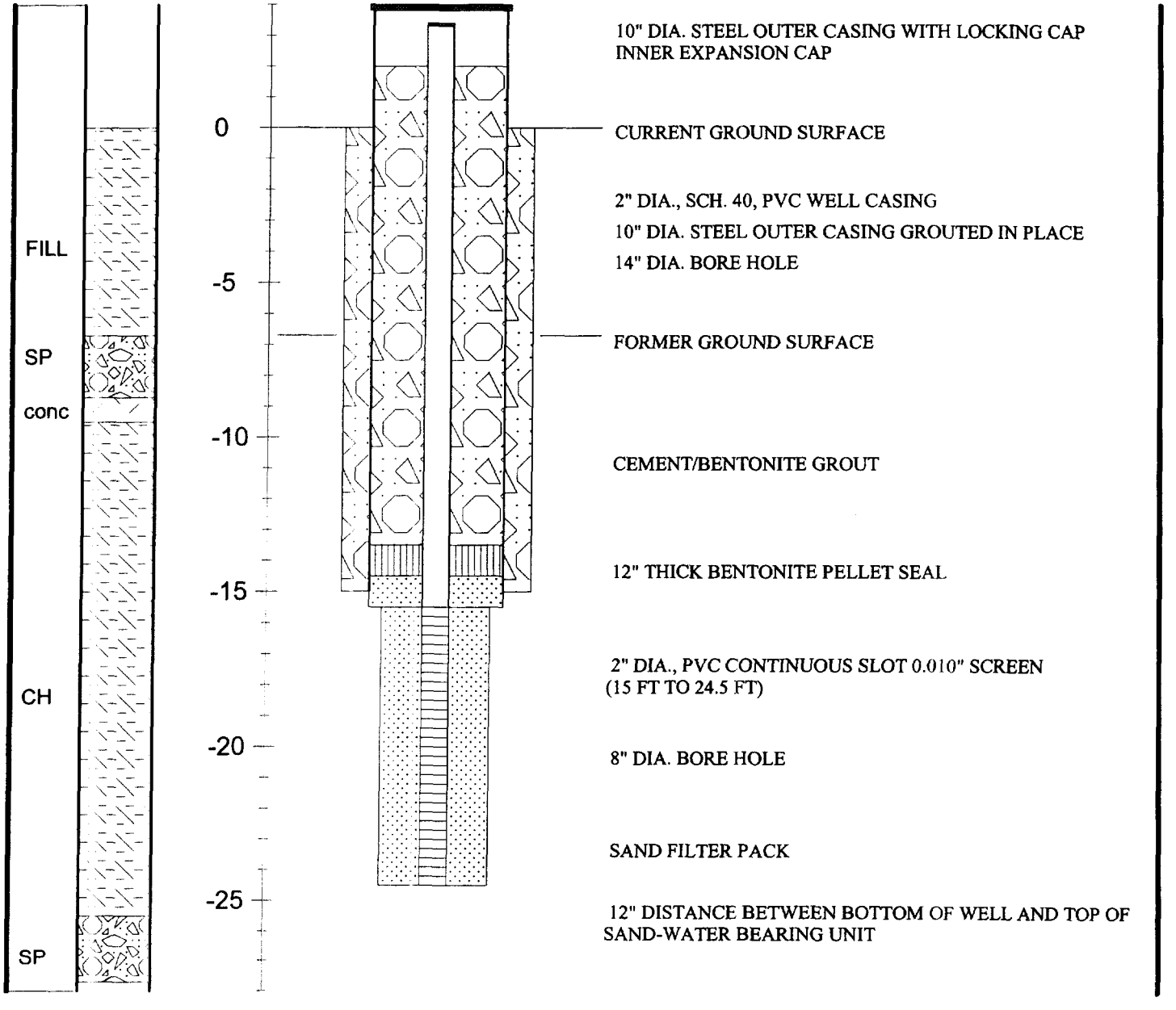
DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **Not Surveyed**

SURVEY COORDINATES: **921930.28N 725776.53E**

USCS	GRAPHIC LOG	DEPTH (ft)	WELL CONSTRUCTION



ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-4A**
TOTAL DEPTH: **21.0'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**5-1-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-2	0.8	7, 5, 6, 20	708	0		SP		SAND WITH GRAVEL: Gray sand and gravel fill.
						conc	2.0	
2-4	0.5	100/6"	- -				2.8	CONCRETE: Concrete pad.
4-6	0.9	9, 16, 22, 11	24	-5				SILTY CLAY: Gray silty clay with a trace of fine gravel and a trace of sand. Moist.
6-8	0.9	8, 9, 14, 19	60					
						CH		
8-10	1.0	9, 8, 10, 10	<1	-10				
10-12	1.0	1, 4, 6, 7	<1					
12-14	1.4	4, 5, 6, 7	<1					
14-16	1.4	4, 2, 2, 1	<1	-15				
16-18	0.8	1, 2, 2, 2	<1					
							18.8	
18-20	0.9	1, 1, 2, 4	<1	-20		SP		SAND WITH GRAVEL: Gray coarse sand with some medium sand and some medium to fine gravel. Wet.
20-22	1.0	6, 7, 11, 10	<1					

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-6**

TOTAL DEPTH: **14.9'**

PROJECT INFORMATION

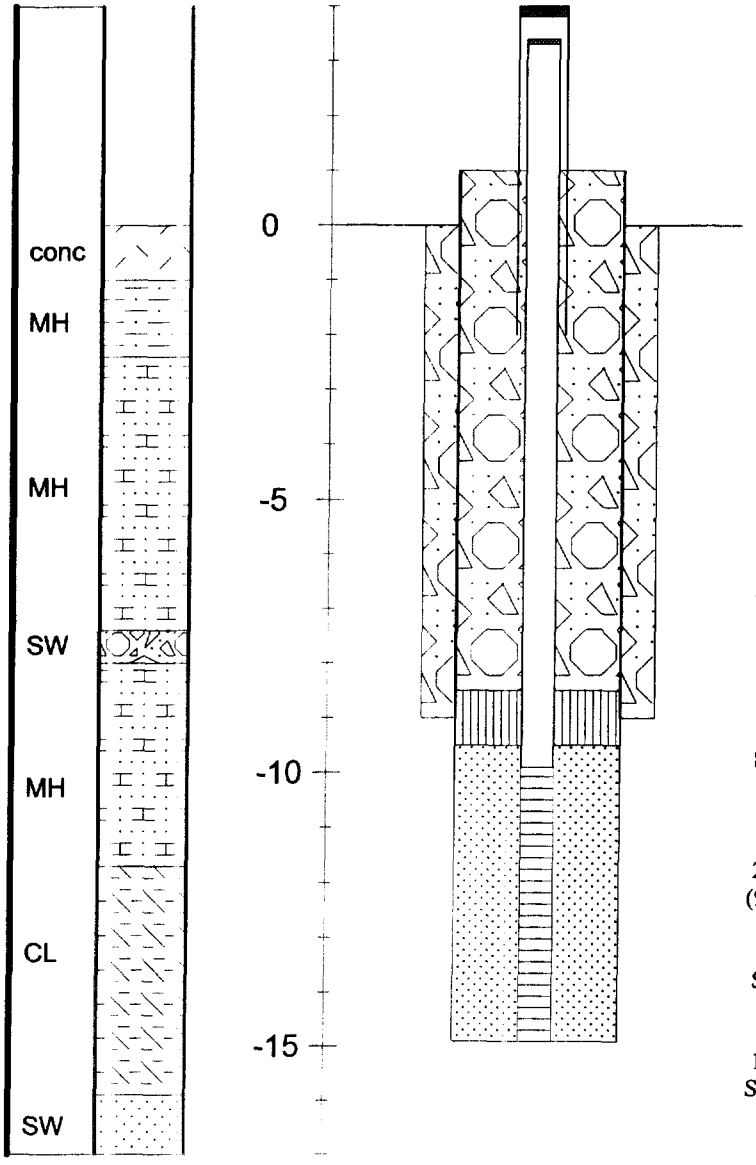
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**5-2-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **Not Surveyed**

SURVEY COORDINATES: **922124.71N 725952.57E**



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650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-6**
TOTAL DEPTH: **17.0'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-23-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
				0		conc	1.0	CONCRETE: Concrete
0-2	1.0	-, -,2, 3	2			MH		SILT: Brown silt, with a trace of sand to fine gravel. Dry.
2-4	1.5	3, 5, 10 ,12	33				2.4	CLAYEY SILT: Dark brown clayey silt grading to a dark brown silty clay with a trace of coarse sand to gravel. Moist.
4-6	0.7	3, 6, 9, 9	146	-5		MH		
6-8	2.0	3, 2, 4, 5	452			SW	7.4	
							8.0	SAND WITH GRAVEL: Gray medium to coarse sand with some fine to medium gravel. Wet with a strong chemical odor.
8-10	2.0	4, 6, 6, 7	222	-10		MH		CLAYEY SILT: Dark brown clayey silt with a trace of medium sand to fine gravel. Moist.
10-12	1.7	1, 3, 7, 8	137				11.7	SILTY CLAY: Gray-brown silty clay with few sand and a trace of fine gravel. Moist.
12-14	2.0	3, 3, 3, 4	73			CL		
14-16	2.0	3, 3, 4, 7	125	-15			15.9	
						SW		SAND: Gray medium to coarse sand with a little fine gravel. Wet.
16-18	1.0	2, 1, 1, 2	1					

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: T-7

TOTAL DEPTH: 13.4'

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**5-2-98**

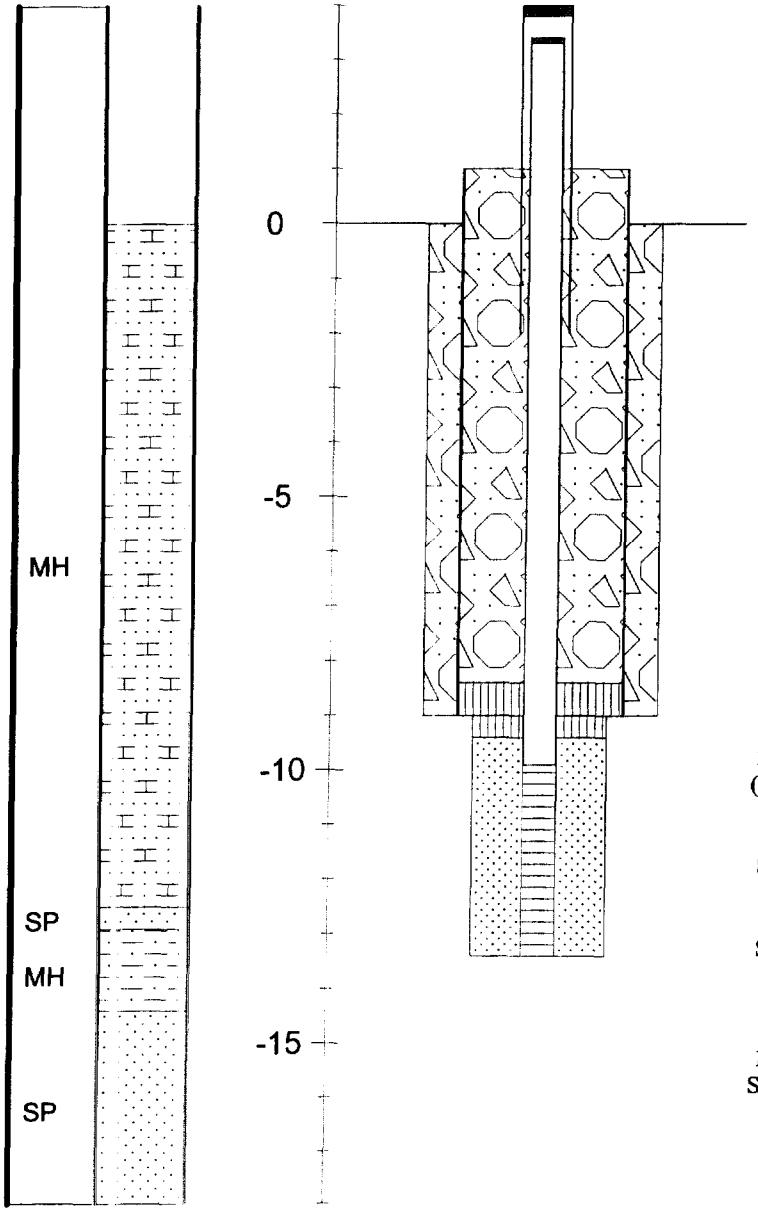
DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **Not Surveyed**

SURVEY COORDINATES: **921957.62 725981.21**

USCS	GRAPHIC LOG	DEPTH (ft)	WELL CONSTRUCTION



3" DIA. STEEL OUTER CASING WITH LOCKING CAP

INNER EXPANSION CAP

CURRENT GROUND SURFACE

2" DIA., SCH. 40, PVC WELL CASING

10" DIA. STEEL OUTER CASING GROUTED IN PLACE

14" DIA. BORE HOLE

CEMENT/BENTONITE GROUT

12" THICK BENTONITE PELLET SEAL

2" DIA., PVC CONTINUOUS SLOT 0.010" SCREEN
(9.9 FT TO 13.4 FT)

8" DIA. BORE HOLE

SAND FILTER PACK

12" DISTANCE BETWEEN BOTTOM OF WELL AND TOP OF SAND-WATER BEARING UNIT

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-7**
TOTAL DEPTH: **18.0'**

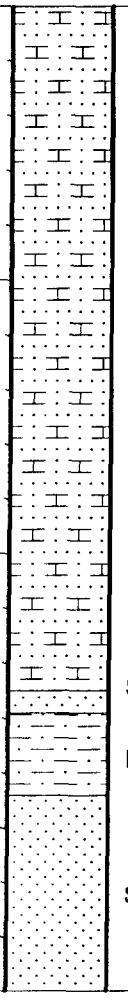
PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-28-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-2	2.0	2, 2, 3, 4	4	0				CLAYEY SILT: Brown to gray-brown clayey silt with a trace of fine gravel. Dry.
2-4	1.7	-, 7, 6, 6	22					
4-6	1.7	4, 3, 3, 8	63	-5		MH		
6-8	2.0	4, 4, 5, 5	381					
8-10	1.5	2, 7, 5, 5	585	-10				
10-12	0.2	2, 4, 4, 4	113			SP	12.5	
12-14	1.6	2, 4, 7, 17	10			MH	12.9	SAND: Gray brown medium to coarse sand with a little fine to medium gravel. Wet.
14-16	2.0	2, 7, 13, 14	2	-15			14.4	SILT: Gray-brown silt with a trace of fine gravel and a trace of sand. Dry.
16-18	2.0	3, 2, 6, 7	2			SP		SAND: Gray brown medium to coarse sand with a little fine gravel. Wet.

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-8**

TOTAL DEPTH: **13.4'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**4-28-98**

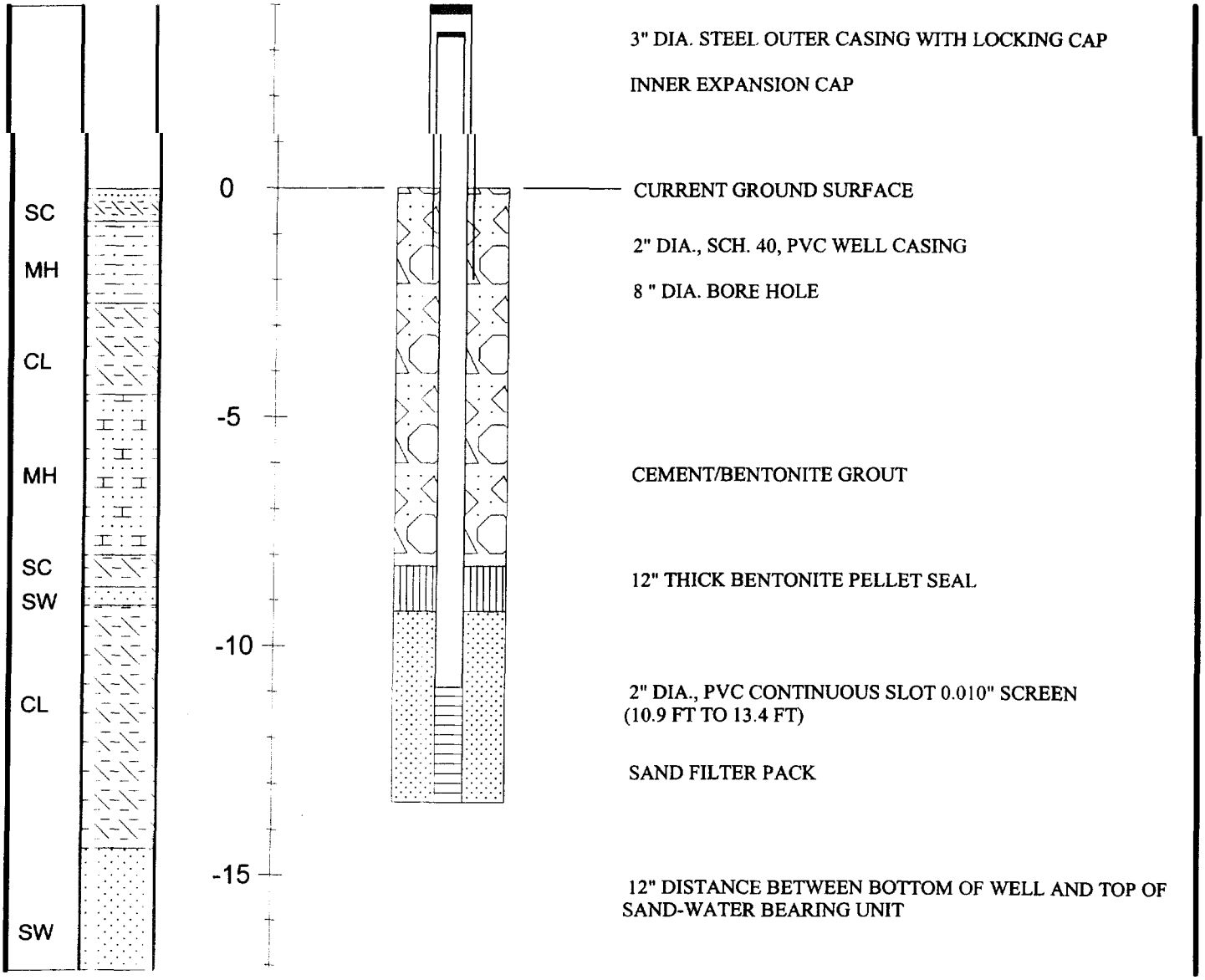
DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **888.88**

SURVEY COORDINATES: **921724.88N 725944.59E**

USCS	GRAPHIC LOG	DEPTH (ft)	WELL CONSTRUCTION



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650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-8**
TOTAL DEPTH: **17.1'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-27-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-2	1.5	1, 1, 3, 3	1	0		SC	0.7	CLAYEY SAND: Brown clayey sand. Moist.
						MH		SILT: Orange brown silt with a little sand and a trace of fine gravel. Dry.
2-4	1.2	3, 4, 4, 5	3				2.5	SILTY CLAY: Brown silty clay with a trace of sand. Moist.
						CL		
4-6	2.0	4, 4, 6, 8	6	-5			4.5	CLAYEY SILT: Brown clayey silt with few coarse sand to fine gravel. Moist.
						MH		
6-8	2.0	5, 5, 5, 6	5					
						SC	8.0	CLAY AND SAND: Gray clayey sand. Wet.
8-10	1.0	2, 2, 4, 8	<1			SW	8.7 9.1	SAND: Gray medium to coarse sand with some fine gravel. Wet.
				-10				
10-12	0.6	3, 7, 3, 5	8			CL		SILTY CLAY: Gray silty clay with a trace of fine gravel and a trace of sand. Wet. Contained a 2" coarse sand seam at 13'.
12-14	1.5	4, 4, 5, 7	<1					
							14.4	
14-16	1.0	7, 4, 5, 6	<1	-15				SAND: Gray-brown medium to coarse sand with few fine gravel. Wet.
						SW		
16-18	1.1	2, 3, 4, 9	<1					

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-9**

TOTAL DEPTH: **25.5'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**5-11-98**

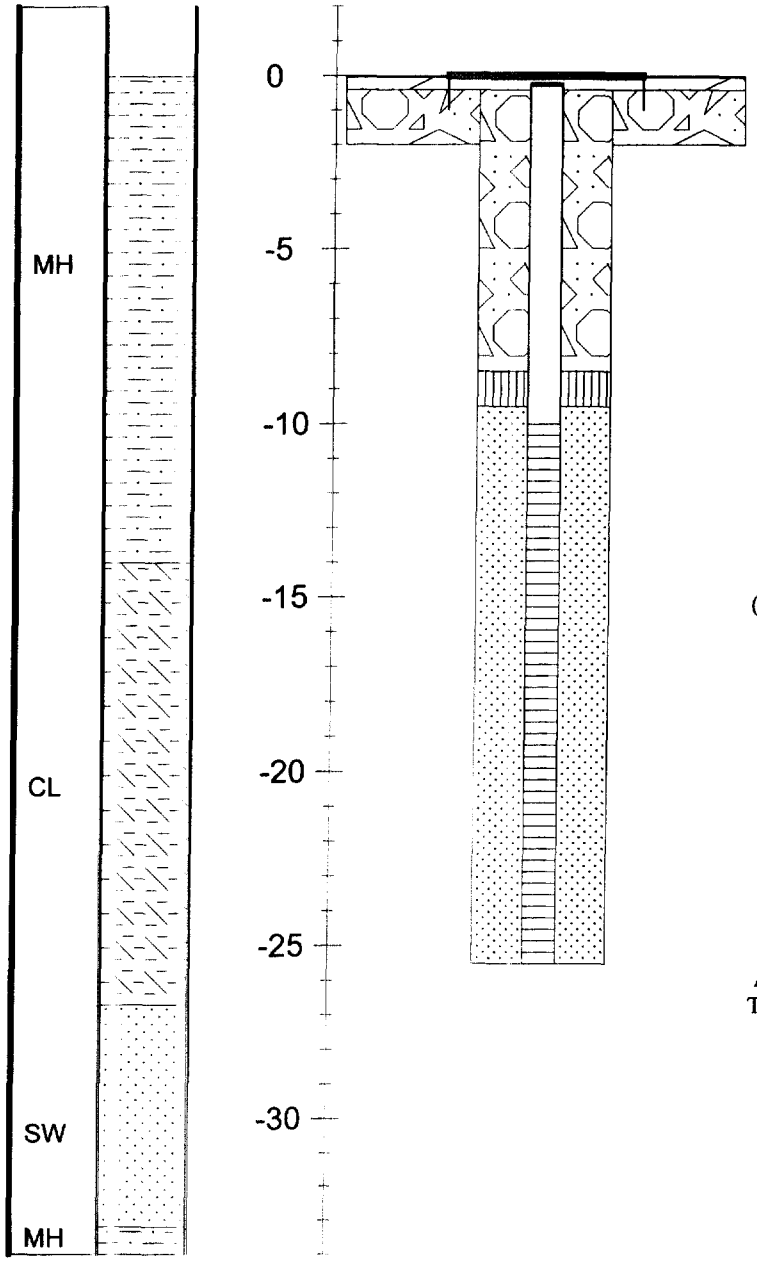
DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **882.08**

SURVEY COORDINATES: **921571.18N 725827.61E**

USCS | GRAPHIC LOG | DEPTH (ft) | WELL CONSTRUCTION



12" STEEL BOLT-DOWN FLUSHMOUNT

CURRENT GROUND SURFACE

INNER EXPANSION CAP WITH LOCK

24" DEEP CONCRETE PAD

2" DIA., SCH. 40, PVC WELL CASING
8" DIA. BORE HOLE

CEMENT/BENTONITE GROUT

12" THICK BENTONITE PELLET SEAL

2" DIA., PVC CONTINUOUS SLOT 0.010" SCREEN
(10 FT TO 25.5 FT)

SAND FILTER PACK

APPROX. 12" DISTANCE BETWEEN BOTTOM OF WELL AND TOP OF SAND-WATER BEARING UNIT

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-9**
TOTAL DEPTH: **34.0'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**5-5-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-10		no sampling		0				SILT; field observation
10-12	0.5	1, 2, 3, 6	<1	-5		MH		SILT: Gray-brown silt with a little clay, a little sand, and a trace of gravel. Dry.
12-14	0	4, 5, 5, 8	<1	-10			14.0	
14-16	1.5	3, 4, 6, 8	<1	-15				SILTY CLAY: Dark gray-brown silty clay with a trace of fine gravel and few sand. Moist.
16-18	1.5	1, 1, 3, 4	<1					
18-20	1.5	1, 1, 3, 4	<1	-20		CL		
20-22	1.1	1, 1, 2, 2	<1					
22-24	1.8	1, 1, 2, 4	<1					
24-26	1.4	1, 1, 3, 4	<1	-25				
26-28	2.0	1, 1, 1, 4	<1				26.7	SAND: Medium to coarse sand with a trace of fine gravel. Dry.
28-30	1.3	1, 1, 1, 4	<1	-30		SW		
30-32	2.0	2, 2, 4, 8	<1					
32-34	2.0	5, 13, 48, 48	<1			MH	33.2	SILT: Dark brown silt with a trace of clay and a trace of fine gravel. Dry.

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO.: **T-10**

TOTAL DEPTH: **17.9'**

PROJECT INFORMATION

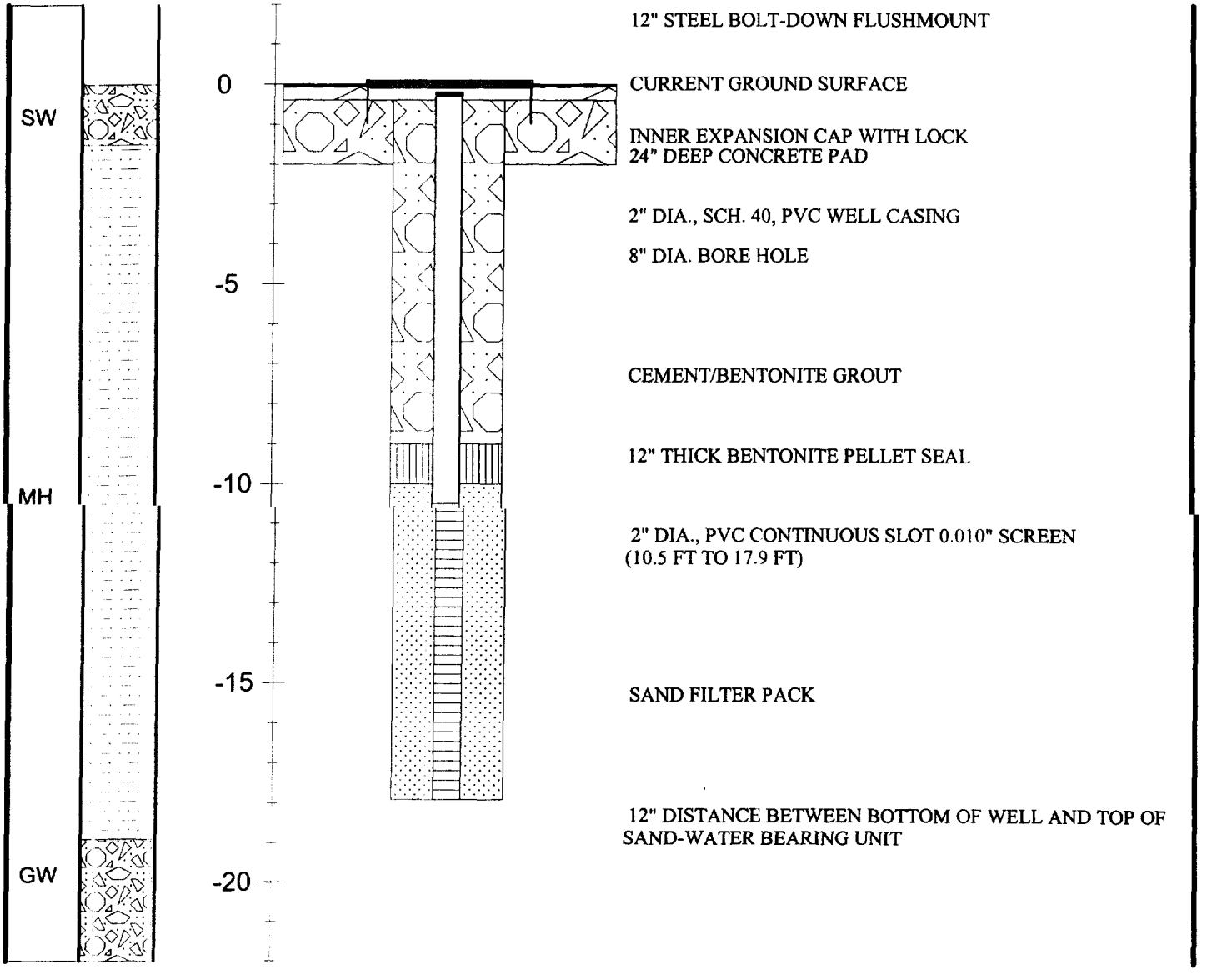
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**4-21-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **889.42**

SURVEY COORDINATES: **921893.75N 725713.56E**



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650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **T-10**
TOTAL DEPTH: **22.0'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-21-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-2	1.7	34, 26, 12, 12	--	0		SW	1.5	SAND WITH GRAVEL: Gray-brown coarse sand to coarse gravel. Dry.
2-4	1.6	11, 11, 17, 16	--					SANDY SILT: Dark brown fine to medium sand with few silt grading to gray sandy silt with a little clay and a trace of fine gravel. Wet below 7'.
4-6	1.3	12, 14, 15, 16	--	-5				
6-8	1.5	3, 2, 2, 3	--					
8-10	1.4	2, 1, 2, 8	--	-10		MH		
10-12	2.0	2, 4, 7, 6	--					
12-14	0.1	4, 4, 4, 4	--					
14-16	0.8	3, 4, 6, 7	--	-15				
16-18	1.5	4, 5, 6, 7	--					
18-20	1.5	1, 1, 1, 2	--	-20		GW	18.9	GRAVEL: Gray gravel with some coarse sand. Wet.
20-22	2.0	4, 6, 9, 9	--					

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO. **S-1**

TOTAL DEPTH: **39.0'**

PROJECT INFORMATION

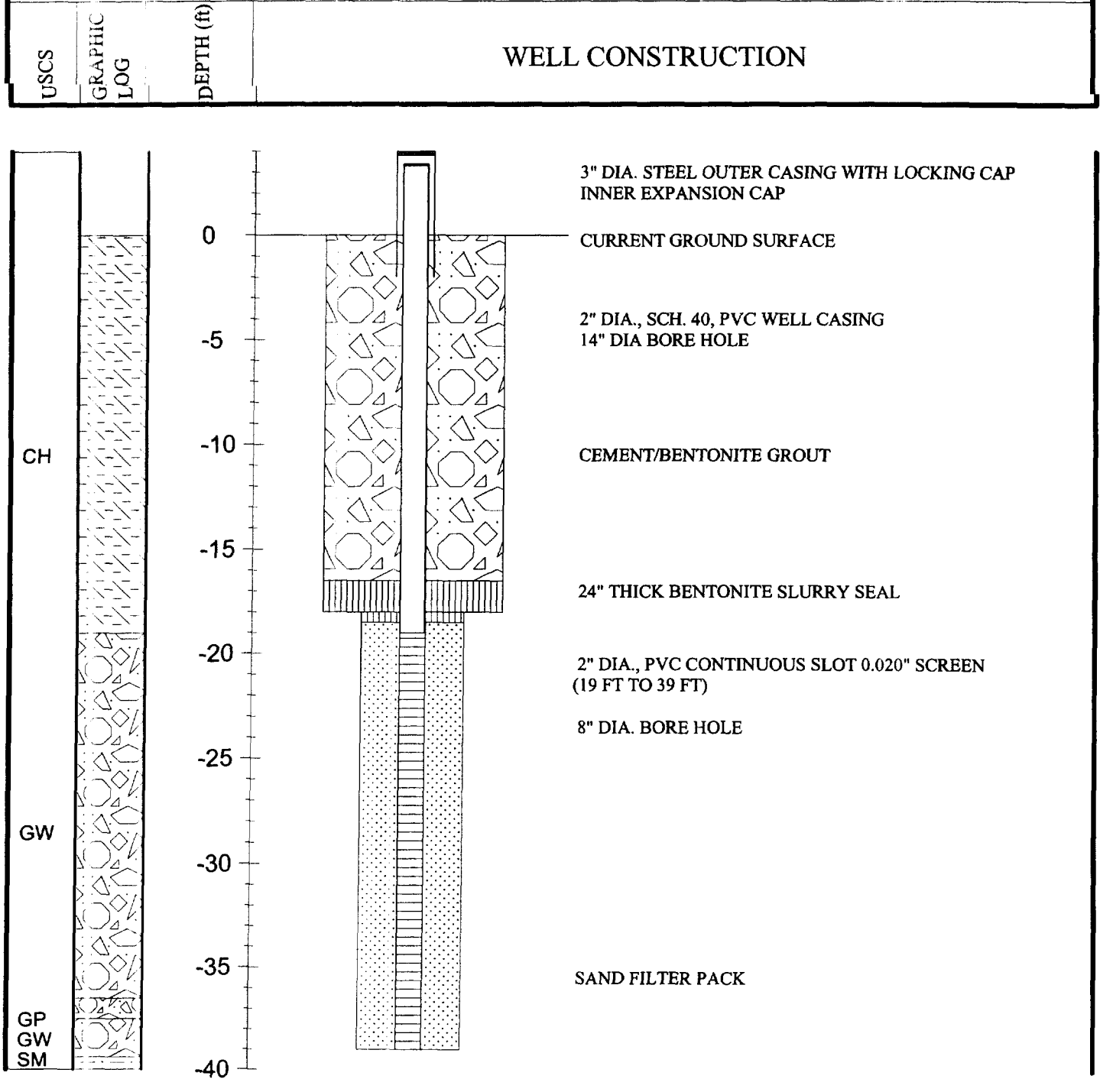
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**4-28-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **890.27**

SURVEY COORDINATES: **922292.79N 725829.00E**



ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **S-1**
TOTAL DEPTH: **40'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-29-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES:

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-20		(no sampling)		-20		CH		SILTY CLAY: Brown silty clay with a trace of fine gravel. Dry. (from boring T-5 and field observations)
20-22	1.1	1,1,4,5,	0					GRAVEL WITH SAND: Fine to medium gravel with some medium to coarse sand. Wet.
22-24	2.0	4,5,8,12	0					
24-26	2.0	3,4,6,12	0	-25				
26-28	2.0	1,6,9,12	0			GW		
28-30	2.0	1,3,9,14	0	-30				
30-32	2.0	2,4,14,20	0					
32-34	2.0	10,14,14,16	0					
34-36	2.0	6,10,13,20	0	-35				
36-38	2.0	1,4,9,13	0			GP	36.5	GRAVEL: Medium gravel with some fine gravel and medium to coarse sand. Wet.
						GW	37.5	
38-40	2.0	1,4,6,10	0	-40		SM	39.4	GRAVEL WITH SAND: Fine to medium gravel with some medium to coarse sand. Wet.
								SAND AND SILT: Brown fine sand to silt. Wet.

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO. **S-2**

TOTAL DEPTH: **20.5'**

PROJECT INFORMATION

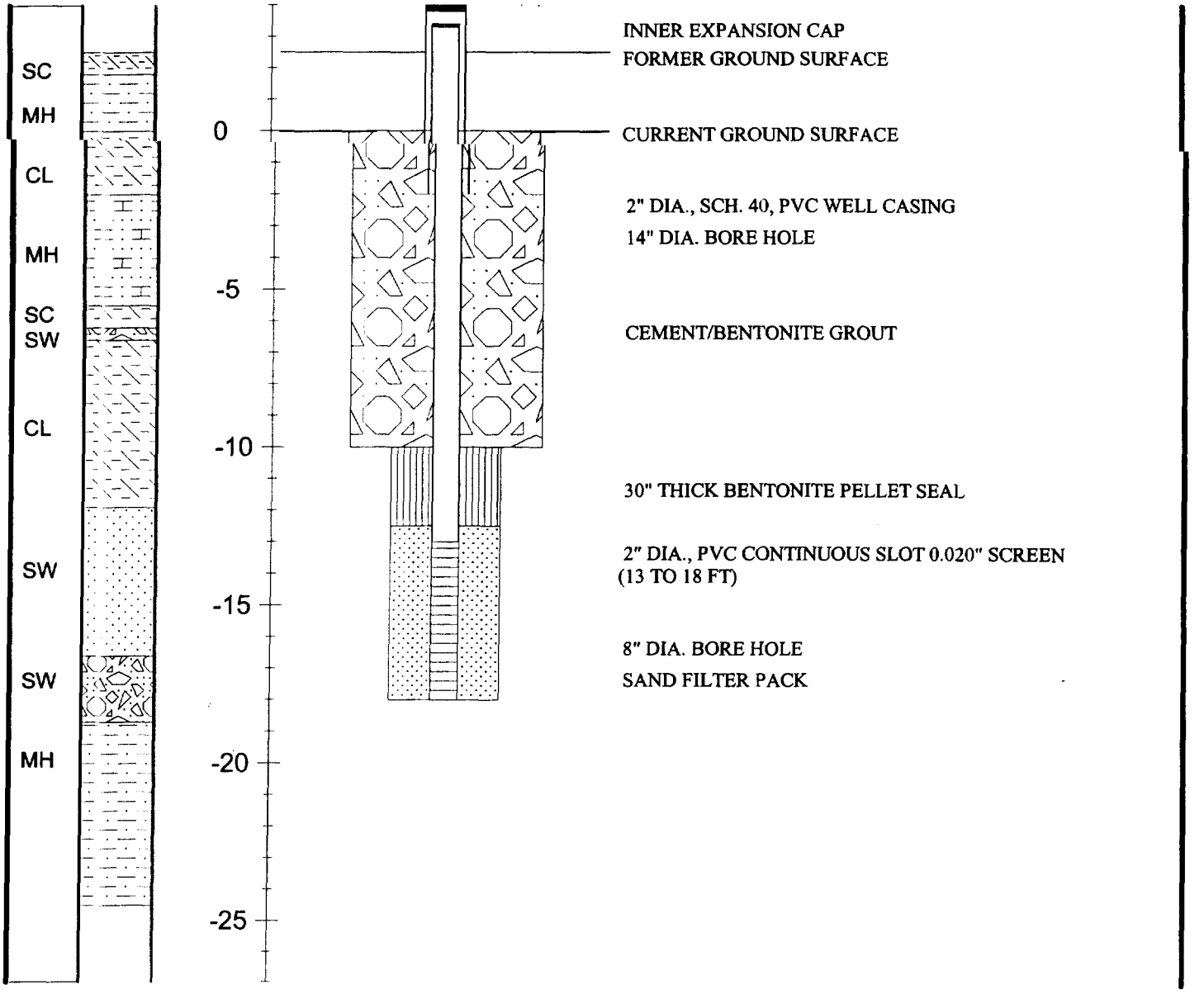
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO :	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**4-29-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **888.46**

SURVEY COORDINATES: **921706.31N 725942.89E**



ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **S-2**
TOTAL DEPTH: **26.1'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-28-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES: Log information from 0 to 17' is from boring T-8.

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
1-17		no sampling (upper 2.5 ft later removed)		0		SC	0.7	CLAYEY SAND: (1 to 17 ft soil information from adjacent boring T-8)
						MH	2.5	SILT: (from boring T-8)
						CL	4.5	SILTY CLAY: (from boring T-8)
				-5		MH		CLAYEY SILT: (from boring T-8)
						SC	8.0	CLAY AND SAND: (from boring T-8)
						SW	8.7 9.1	SAND WITH GRAVEL: (from boring T-8)
				-10		CL		SILTY CLAY: (from boring T-8)
				-15		SW	14.4	SAND: (from boring T-8)
17-19	0.7	3, 3, 4, 6	<1					SAND: Gray-brown medium to coarse sand with few fine gravel. Wet.
19-21	1.0	2, 28, 8, 4	<1	-20		SW	19.1	SAND WITH GRAVEL: Brown medium sand grading to a medium sand with some fine to medium gravel. Wet.
21-23	1.7	2, 7, 10, 15	<1				21.2	SILT: Gray silt with little fine sand and trace clay and trace fine gravel. Dry
23-25	1.7	2, 8, 13, 22	<1			MH		
25-27	1.7	12, 18, 22, 34	<1	-25				

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO. **S-3**

TOTAL DEPTH: **35.5'**

PROJECT INFORMATION

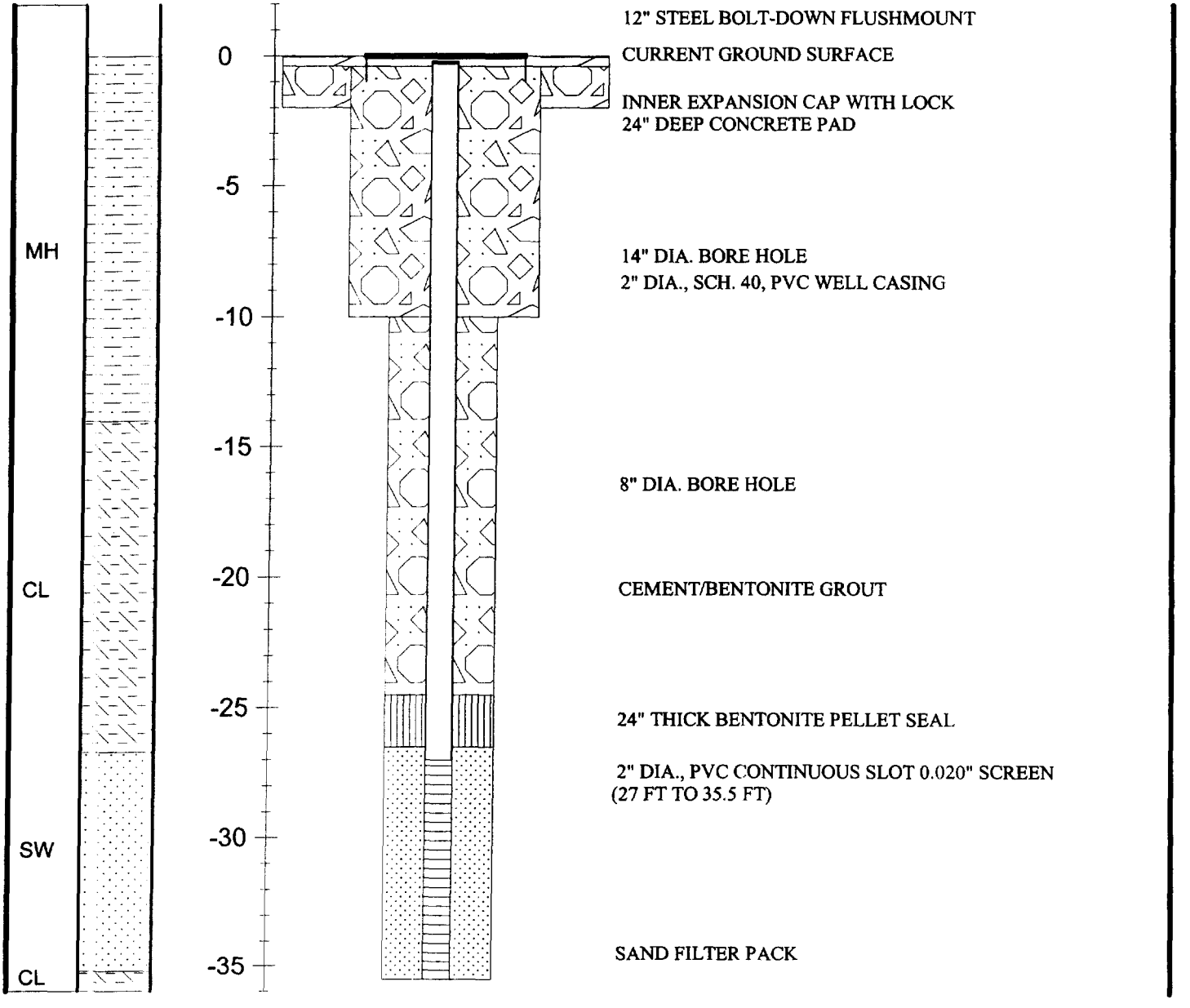
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Matt Makowski**
DATE(S) DRILLED:	**5-12-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **882.45**

SURVEY COORDINATES: **921585.65N 725813.30E**



ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **S-3**
TOTAL DEPTH: **36'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**5-11-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES: Log information from 0 to 32' was copied from boring T-9.

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-32		no sampling		-10		MH		No samples 0-10 ft: SILT: (10 to 32 ft soil information from boring T-9)
							14.0	SILTY CLAY: (from boring T-9)
				-15		CL		
				-20				
				-25				
							26.7	SAND: (from boring T-9)
				-30		SW		
32-34	2.0	>100	2			SW		SAND: Medium to coarse sand with a trace of fine gravel. Dry
34-36	2.0	2, 12, 17, 22	1	-35		CL	35.2	SILTY CLAY: Light brown silty clay

ENVIRON

650 Dundee Road, Suite 150
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WELL CONSTRUCTION LOG

MONITORING WELL NO. **S-4A**

TOTAL DEPTH: **48.0'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**12-11-98**

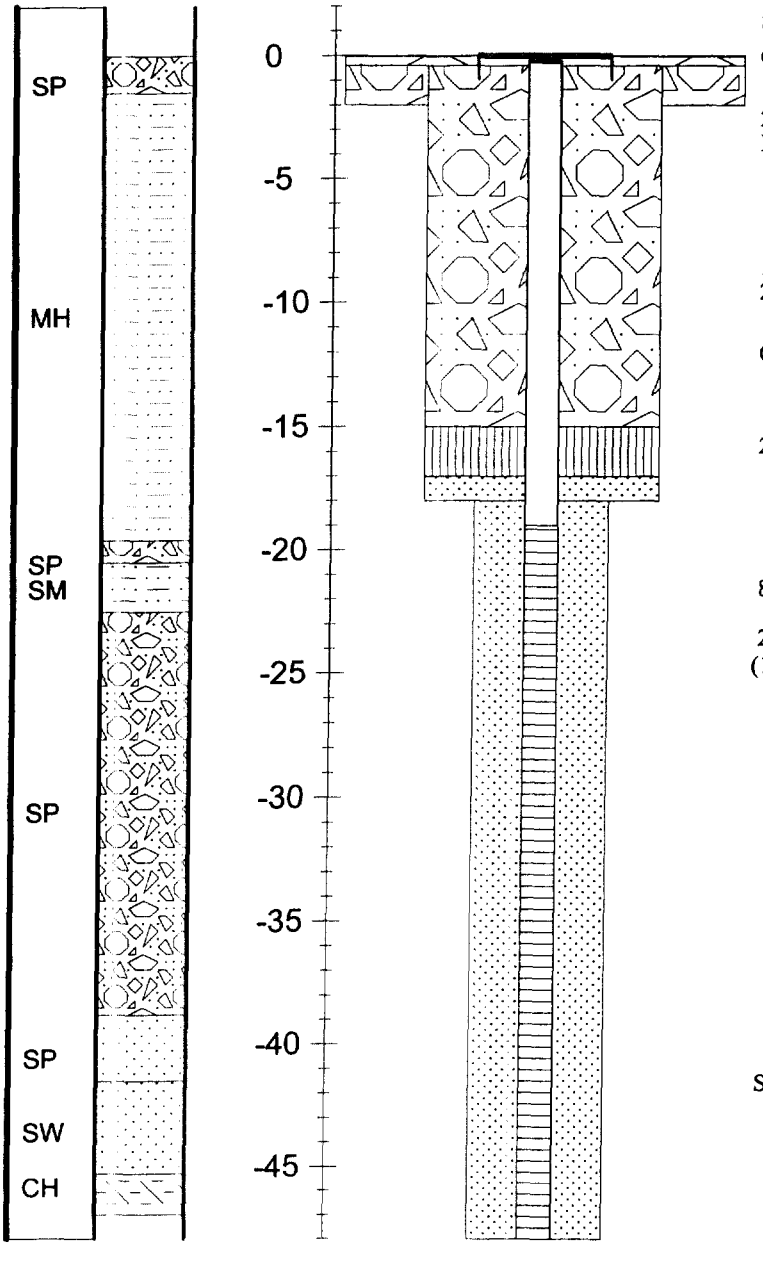
DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **Not yet surveyed**

SURVEY COORDINATES: **Not yet surveyed**

USCS	GRAPHIC LOG	DEPTH (ft)	WELL CONSTRUCTION



8" STEEL BOLT-DOWN FLUSHMOUNT
CURRENT GROUND SURFACE

24" DEEP CONCRETE PAD
INNER EXPANSION CAP WITH LOCK

14" DIA. BORE HOLE
2" DIA., SCH. 40, PVC WELL CASING

CEMENT/BENTONITE GROUT

24" THICK BENTONITE PELLET SEAL

8" DIA. BORE HOLE

2" DIA., PVC CONTINUOUS SLOT 0.010" SCREEN
(19.6 FT TO 48 FT)

SAND FILTER PACK

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **S-4A**
TOTAL DEPTH: **47'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**5-12-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES: Log information from 0 to 19' was copied from boring T-10.

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-19		(no sampling)		0		SP	1.5	SAND WITH GRAVEL: ((0 to 19 feet soil information from adjacent boring T-10)
				-5		MH		SANDY SILT: (from boring T-10)
				-10				
				-15				
19-21	1.5	4, 5, 6, 7	--	-20		SP SM	19.6 20.5	SANDY SILT: Dark brown fine to medium sand with few silt grading to gray sandy silt with a little clay and a trace of fine gravel. Wet.
21-23	1.3	1, 1, 1, 2	--				22.5	
23-25	1.3	4, 6, 9, 9	--	-25				SAND WITH GRAVEL: Gray medium to coarse sand with some fine to medium gravel. Wet.
25-27	1.4	8, 4, 5, 8	--					
27-29	1.3	1, 2, 3, 6	--					SILTY SAND: Gray silty sand with a little clay and a trace of fine to medium gravel. Wet.
29-31	1.5	1, 7, 9, 3	--	-30		SP		
31-33	2.0	4, 5, 5, 8	--					SAND WITH GRAVEL: Gray-brown coarse sand to fine and medium gravel. Wet. Consists of layers containing varying amounts of fine and medium gravel.
33-35	2.0	3, 4, 6, 6	--	-35				
35-37	2.0	6, 7, 9, 13	--					
37-39	1.5	9, 26, 13, 33	--				38.8	
39-41	1.4	6, 12, 24, 28	--	-40		SP		SAND: Gray-brown fine to medium sand. Wet.
41-43	1.5	1, 2, 4, 6	--				41.5	
43-45	2.0	3, 18, 24, 30	--			SW		SAND: Gray-brown medium sand with a trace of medium gravel. Fine sand to silt seam from 43.6 to 44'.
45-47	2.0	3, 38, 98,	--	-45		CH	45.3	SILTY CLAY: Gray-brown silty clay. Dry.

ENVIRON

650 Dundee Road, Suite 150
Northbrook, Ilinois 60062

WELL CONSTRUCTION LOG

MONITORING WELL NO. **Piezometer-1**

TOTAL DEPTH: **32.0'**

PROJECT INFORMATION

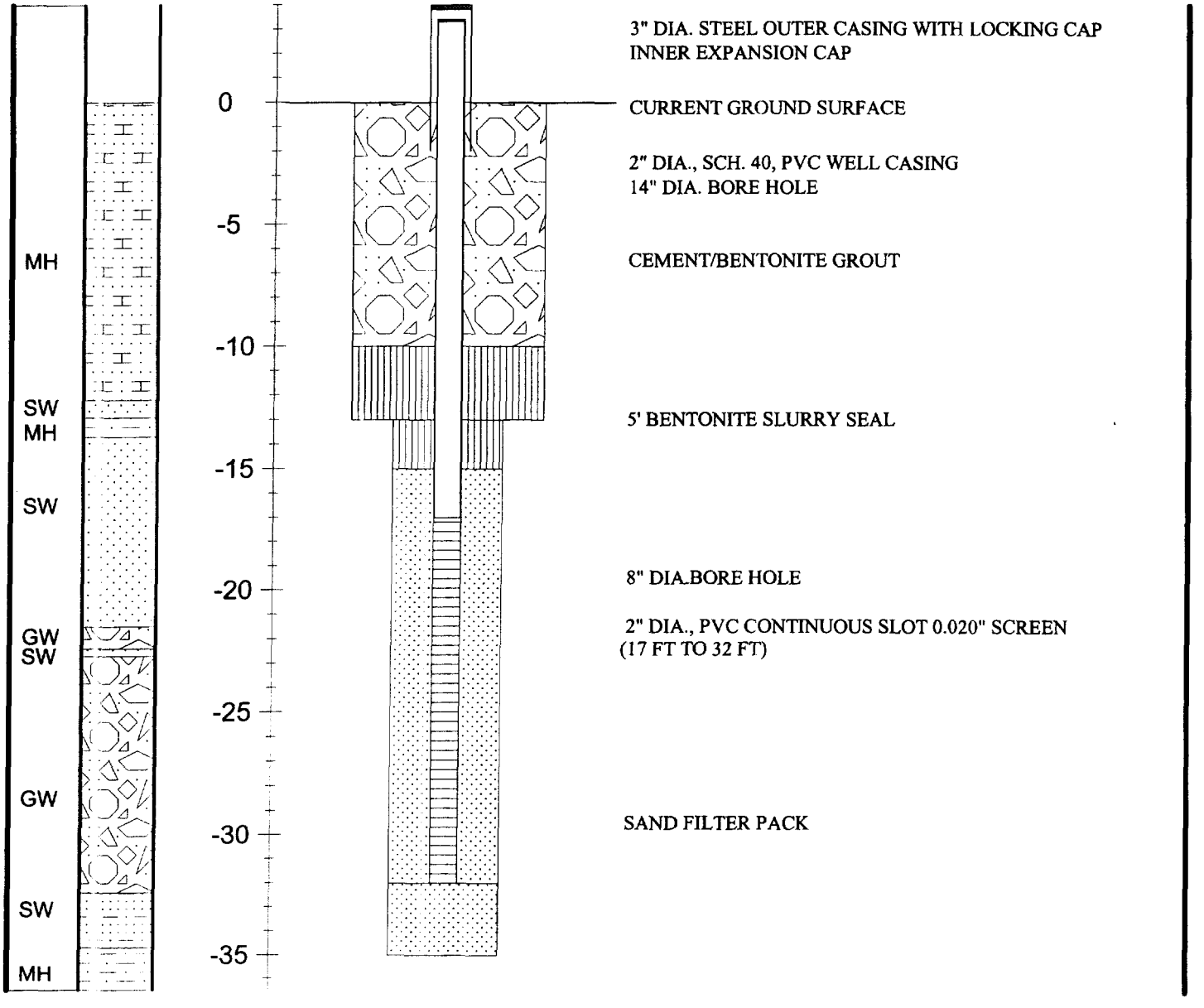
PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
DATE(S) DRILLED:	**4-30-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
BORE HOLE DIAMETER:	**California split spoon**

T.O.C. ELEVATION: **889.66**

SURVEY COORDINATES: **921926.94N 725958.13E**



ENVIRON

650 Dundee Road, Suite 150
Northbrook, Illinois 60062

GEOLOGIC DRILL LOG

BOREHOLE NO.: **Piezometer-1**
TOTAL DEPTH: **36.5'**

PROJECT INFORMATION

PROJECT:	**ECC: Monitoring Wells**
SITE LOCATION:	**Zionsville, IN**
JOB NO.:	**21-6585B**
LOGGED BY:	**Scott Hayter**
PROJECT MANAGER:	**Ron Hutchens**
DATES DRILLED:	**4-30-98**

DRILLING INFORMATION

DRILLING CO.:	**EDAC**
DRILLER:	**Dan Dreyer**
RIG TYPE:	**Gus Peck GP-1300**
METHOD OF DRILLING:	**hollow-stem auger**
SAMPLING METHODS:	**split spoon**
HAMMER WT./DROP	**140 lb., 30 in.**

NOTES: Soil description from 0 to 13 ft has been taken from T-7.

SS INTERVAL (ft)	SS RECOVERY (ft)	BLOW COUNTS	PID (ppm)	DEPTH (ft)	GRAPHIC LOG	USCS	LAYER DEPTH (ft)	SOIL DESCRIPTION
0-13		no sampling		0				CLAYEY SILT: (from boring T-7)
				-5		MH		
				-10				
						SW	12.2	
							12.9	SAND: (from boring T-7)
						MH	13.8	
13-15	0.8	2, 3, 6, 6	<1	-15				SILT: Gray-brown silt with a trace of fine gravel and a trace of sand. Dry.
15-17	1.7	3, 2, 2, 4	<1			SW		
17-19	2.0	3, 8, 10, 15	<1					SAND: Gray brown medium to coarse sand with a little fine gravel. Wet.
19-21	2.0	6, 11, 12	<1	-20				
						GW	21.9	
21-23	2.0	9, 15, 16	<1			SW	22.7	GRAVEL WITH SAND: Gray-brown fine to medium gravel with some coarse sand. Wet.
23-25	2.0	4, 6, 6	<1	-25			23.0	SAND: Gray-brown fine to medium sand.
25-27	2.0	11, 13, 14	<1					
27-29	2.0	7, 12, 13	<1			GW		GRAVEL WITH SAND: Gray-brown fine to medium gravel with some coarse sand. Wet.
29-31	2.0	8, 17, 17	<1	-30				
31-33	2.0	13, 14, 15	<1				32.7	SAND AND SILT: Gray-brown sandy silt. Wet.
33-35	1.0	5, 10, 25	<1			SW		
				-35			35.0	SILT: Gray silt with a trace of fine gravel. Dry.
35-37	1.5	22, 33, 50	<			MH		

APPENDIX B

Field Measurements/Purge Data

TABLE B-1
Enviro-Chem On-Site Till Wells
Field Measurements and Purge Data
Fourth Quarter 1998

Field Parameters and Data	T-1	T-2	T-3	T-4A		
Date	11/10/98	11/10/98	11/10/98	11/9/98		
Weather Conditions	Rain 65 F	Rain 65 F	Rain 65 F	Overcast 55 F		
Before Purging						
PID Reading (ppm) 11/9/98	<1	784	99	<1		
pH	8.91	7.78	NM	NM		
Dissolved Oxygen (ppm)	1.36	4.30	NM	NM		
Temperature (C)	15.6	15.8	NM	NM		
Specific Conductivity (uS/cm)	0.622	1.54	NM	NM		
Total Depth of Well (Feet below ground surface)	29.4*	30.3	27.6	24.2		
Depth to water (Ft from top of inner casing to water)	20.53*	20.95	14.12	18.93		
Estimated water volume in well (gallons)	1.45	1.52	2.20	0.86		
Three Well Volumes(gallons)	4.34	4.59	6.59	2.58		
After Purging						
Purge Start	1130	1130	11/10/98	11/9/98		
Purge End	1215	1220	11/11/98	11/11/98		
Purge Method	BT	BT	BT	BT		
Approximate Purge Rate (gpm)	0.1	0.1	NM	NM		
Total Volume Purged (gal.)	4**	5	5**	5		
pH	9.52	11.18	NM	NM		
Dissolved Oxygen (ppm)	2.01	3.36	NM	NM		
Temperature (C)	14.3	14.8	NM	NM		
Specific Conductivity (uS/cm)	0.52	1.06	NM	NM		
Sampling						
Sampling Date(s)	11/10/98	11/10/98	11/11, 11/12 and	11/10, 11/11 and		
Sampling End Time	1735	1655	11/13/98	11/12/98		
Sampling Method	BT	BT	BT	BT		

Notes:
** = Well purged dry
NM = no measurement
*depth from top of steel casing
BT = Bailer (Teflon)
PP = Peristaltic Pump
PID = Photoionization Detector

TABLE B-2
Enviro-Chem Off-Site Till Wells
Field Measurements and Purge Data
Fourth Quarter 1998

Field Parameters and Data	T-5	T-6	T-7	T-8	T-9	T-10
Date	11/9/98	11/9/98	11/10/98	11/10/98	11/12/98	11/9/98
Weather Conditions	Overcast 55 F	Overcast 55 F	Rain 65 F	Rain 65 F	Sunny 50 F	Overcast 55 F
Before Purging						
PID Reading (ppm) 11/9/98	<1	53	1	<1	10	14
pH	NM	NM	NM	NM	7.12	NM
Dissolved Oxygen (ppm)	NM	NM	NM	NM	1.21	NM
Temperature (C)	NM	NM	NM	NM	15.5	NM
Specific Conductivity (uS/cm)	NM	NM	NM	NM	1.2	NM
Total Depth of Well (Feet below ground surface)	19.2	20.4	17.6	15.9	25.3	17.9
Depth to water (Ft from top of inner casing to water)	11.09	12.89	12.35	10.42	3.0	8.19
Estimated water volume in well (gallons)	1.32	1.22	0.86	0.89	3.64	1.58
Three Well Volumes(gallons)	3.97	3.67	2.58	2.70	10.91	4.75
After Purging						
Purge Start	NM	NM	1310	11/10/98	1130	11/9/98
Purge End	NM	NM	1400	11/11/98	1200	11/11/98
Purge Method	BT	BT	BT	BT	BT	BT
Approximate Purge Rate (gpm)	NM	NM	0.1	NM	0.4	NM
Total Volume Purged (gal.)	3**	6	5	2.5**	12.5	15
pH	NM	NM	NM	7.77	7.2	7.27
Dissolved Oxygen (ppm)	NM	NM	NM	4.53	1.51	5.4
Temperature (C)	NM	NM	NM	16.2	15.1	14.4
Specific Conductivity (uS/cm)	NM	NM	NM	0.732	0.97	1.28
Sampling						
Sampling Date(s)	11/9, 11/11 and	11/9/98	11/10/98	11/10/98 and	11/12/98	11/11/98
Sampling End Time	11/12/98	1530	1520	11/11/98	1345	1700
Sampling Method	BT	BT	BT	BT	BT	BT

Notes:

** = Well purged dry
NM = no measurement
BT = Bailer (Teflon)
PP = Peristaltic Pump
PID = Photoionization Detector

TABLE B-3
Enviro-Chem Off-Site Sand/Gravel Zone Wells (including ECC MW-13)
Field Measurements and Purge Data
Fourth Quarter 1998

Field Parameters and Data	S-1	S-2	S-3	S-4	S-4D	MW-13
Date	11/12/98	11/12/98	11/12/98	11/12/98	11/11/98	11/12/98
Weather Conditions	Sunny 50 F	Sunny 50 F	Sunny 50 F	Sunny 50 F	Windy 55 F	Sunny 50 F
Before Purging						
PID Reading (ppm) 11/9/98	<1	10	15	4	18	NM
pH	7.77	7.38	8.4	7.69	7.78	6.51
Dissolved Oxygen (ppm)	0.15	0.15	0.72	1.08	0.85	1.18
Temperature (C)	13.1	15.3	14.6	12.6	12.1	14.5
Specific Conductivity (uS/cm)	0.63	1.07	0.52	0.572	0.66	1.15
Total Depth of Well (Feet below ground surface)	41.4	21.9	35.4	44.5	41	16.85
Depth to water (Ft from top of inner casing to water)	11.29	9.84	4.46	10.9	14.05	11.64
Estimated water volume in well (gallons)	4.91	1.97	5.04	5.48	4.39	0.85
Three Well Volumes(gallons)	14.72	5.91	15.13	16.43	13.18	2.55
After Purging						
Purge Start	1601	1656	1418	1751	1729	0800
Purge End	1620	1715	1440	1820	1755	0900
Purge Method	PP	PP	PP	PP	PP	BT
Appproximate Purge Rate (gpm)	0.8	0.3	0.7	0.6	0.5	0.15
Total Volume Purged (gal.)	15	6	15	17	14	9
pH	7.63	7.45	7.5	7.71	7.71	7.08
Dissolved Oxygen (ppm)	0.4	0.46	0.67	0.6	0.64	2
Temperature (C)	13.2	15.9	13.8	12.5	12.6	15.2
Specific Conductivity (uS/cm)	0.63	0.857	0.675	0.586	0.665	1.17
Sampling						
Sampling Date(s)	11/12/98	11/12/97	11/12/98	11/12/98	11/11/98	11/12/98
Sampling End Time	1630	1720	1500	1820	1815	1230
Sampling Method	PP	PP	PP	PP	PP	BT

Notes:
* * = Well purged dry
NM = no measurement
BT = Bailer (Teflon)
PP = Peristaltic Pump
PID = Photoionization Detector

TABLE B-4
Enviro-Chem Site Surface Water Sampling
Field Measurements and Flow Data
Fourth Quarter 1998

Field Parameters and Data	SW-1	SW-2				
Date	11/11/98	11/11/98				
Weather Conditions	Windy 55 F	Windy 55 F				
Sampling Time	1410	1515				
pH	8.23	8.25				
Dissolved Oxygen (ppm)	9.76	10.68				
Temperature (C)	8.6	8.1				
Specific Conductivity (uS/cm)	0.67	0.691				
Unnamed Ditch Flow Measurements						
Flow Velocity (ft/sec)	NM	NM				
Cross Sectional Area	NM	NM				
Calculated Flow Volume (Gal/min)	NM	NM				
Storm Event - Rain Accumulation						
Accumulation (inches) *	0.47	0.47				

Notes:
NM = no measurement
* measurement recorded at Fisher weather station in Hamilton County

APPENDIX C

Analytical Results for
Surface and Subsurface Water Samples

TABLE C-1
Analytical Results for Ground Water Samples
Enviro-Chem On-Site Till Monitoring Wells
Fourth Quarter 1998

LOCATION		T-1	T-2	T-3	T-4A
ENVIRON SAMPLE ID		ECTGW1-01	ECTGW2-01	ECTGW3-01	ECTGW4A-01
COLLECTION METHOD		BAILER	BAILER	BAILER	BAILER
COLLECTION DATE		11/10/98	11/10/98	11/11/98 TO 11/13/98	11/10/98 TO 11/12/98
COMMENTS					
Volatile Organic Compounds					
Vinyl Chloride	*[2]*	0.5 U	1900 U	**280**	0.5 U
1,1-Dichloroethene	*[7]*	0.5 U	1900 U	160 U	0.5 U
Acetone	*[3,500]*	2 U	10000 B	550 JB	2 U
Methylene Chloride	*[4.7]*	2 B	**12000** B	**270** B	2 B
1,2-Dichloroethene (TOTAL)	*[70]*	0.4 JB	1900 U	**5200**	0.5 U
Ethylbenzene	*[680]*	0.5 U	1900 U	160 U	0.5 U
Tetrachloroethene	*[0.69]*	**1**	**17000**	160 U	**4**
Toluene	*[2,000]*	0.5 U	**3600**	280	0.6 B
1,1,1-Trichloroethane	*[200]*	0.5 U	**31000**	92 J	0.5 U
1,1,2-Trichloroethane	*[0.61]*	0.5 U	1900 U	160 U	0.5 U
Trichloroethene	*[5]*	0.5 U	**6000**	160 U	5
Xylenes (Total)	*[10,000]*	0.4 JB	1900 U	110 J	0.5 B
Methyl isobutyl ketone	*[1,750]*	2 U	**2700** J	250 J	2 U
Methyl ethyl ketone	*[170]*	2 U	**2200** J	780 U	2 U
Semi-Volatile Organic Compounds					
Bis (2-ethylhexyl) phthalate	*[2.5]*	10 U	**1300**	**29**	**5** J
Di-n-butyl phthalate	*[3,500]*	10 U	59 J	10 U	10 U
1,2-Dichlorobenzene	*[600]*	10 U	**6900**	21	10 U
Diethyl Phthalate	*[28,000]*	10 U	500 U	10 U	10 U
Isoporone	*[8.5]*	10 U	**390** J	3 J	10 U
Naphthalene	*[14,000]*	10 U	410 J	4 J	10 U
Phenol	*[1,400]*	16	500	10	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Subsurface Water Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Subsurface Water Concentrations. BRL - Below Reporting Limit
U - Compound was not detected. J - Estimated Value

TABLE C-1 (cont.)
Analytical Results for Ground Water Samples
Enviro-Chem On-Site Till Monitoring Wells
Fourth Quarter 1998

LOCATION		T-1	T-2	T-3	T-4A
ENVIRON SAMPLE ID		ECTGW1-01	ECTGW2-01	ECTGW3-01	ECTGW4A-01
COLLECTION METHOD		BAILER	BAILER	BAILER	BAILER
COLLECTION DATE		11/10/98	11/10/98	11/11/98 TO 11/13/98	11/10/98 TO 11/12/98
COMMENTS					
Polychlorinated biphenyls					
Aroclor 1016	*[0.0045]*	1 U	1 U	1 U	1 U
Aroclor 1221	*[0.0045]*	2 U	2 U	2 U	2 U
Aroclor 1232	*[0.0045]*	1 U	1 U	1 U	1 U
Aroclor 1242	*[0.0045]*	1 U	1 U	1 U	1 U
Aroclor 1248	*[0.0045]*	1 U	1 U	1 U	1 U
Aroclor 1254	*[0.0045]*	1 U	1 U	1 U	1 U
Aroclor 1260	*[0.0045]*	1 U	1 U	1 U	1 U
Inorganics					
Antimony	*[14]*	1.7 U	1.7 U	1.7 U	1.7 U
Arsenic	*[50]*	3.6 B	6.4 B	9.7 B	1.7 B
Barium	*[1,000]*	425	184	189	197
Beryllium	*[4]*	1 U	0.2 U	1 U	0.2 U
Cadmium	*[10]*	1 U	1.1 B	0.7 U	1.1 B
Hexavalent Chromium	*[50]*	10 BRL	10 BRL	10 BRL	10 BRL
Lead	*[50]*	0.7 U	0.7 U	0.7 U	0.7 U
Manganese	*[7,000]*	115	21	24.7	63
Nickel	*[150]*	0.7 U	2 B	40.3	7.2 B
Silver	*[50]*	0.4 U	0.4 U	0.4 U	0.4 U
Tin	*[21,000]*	4.7 U	4.7 U	4.7 U	4.7 U
Vanadium	*[245]*	0.51 B	1.2 B	0.56 B	0.4 U
Zinc	*[7,000]*	1.5 U	1.5 U	1.5 U	1.5 U
Cyanide (Total)	*[154]*	10 U*	10 U*	26.7 *	10 U*

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Subsurface Water Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Subsurface Water Concentrations.
BRL - Below Reporting Limit
* - Cynanide sample field filtered
U - Compound was not detected.
J - Estimated Value

TABLE C-2
Analytical Results for Ground Water Samples
Enviro-Chem Off-Site Till Monitoring Wells
Fourth Quarter 1998

LOCATION		T-5	T-6	T-7	T-8	T-9	T-10
ENVIRON SAMPLE ID		ECTGW5-01	ECTGW6-01	ECTGW7-01	ECTGW8-01	ECTGW9-01	ECTGW10-01
COLLECTION METHOD		BAILER	BAILER	BAILER	BAILER	BAILER	BAILER
COLLECTION DATE		11/9/98 TO	11/9/98	11/10/98	11/10/98 TO	11/12/98	11/11/98
COLLECTION DATE		11/9/98 TO	11/9/98	11/10/98	11/10/98 TO	11/12/98	11/11/98
COMMENTS		11/12/98			11/11/98		
Volatile Organic Compounds							
Vinyl Chloride	*[525]*	0.5 U	430 J	0.6 J	1	0.5 U	25 U
1,1-Dichloroethene	*[1.85]*	0.5 U	500 U	0.8 U	0.5 U	0.5 U	25 U
Methylene Chloride	*[15.7]*	2 B	970 B	2 B	2 B	2 B	50 B
1,2-Dichloroethene (TOTAL)	*[1.85]*	0.5 U	**20,000**	**23**	10 B	1	930
Ethylbenzene	*[3280]*	0.5 U	500 U	0.8 U	0.5 U	0.5 U	25 U
Tetrachloroethene	*[8.85]*	0.5 U	500 U	0.4 J	7	0.5 U	25 U
Toluene	*[3400]*	0.5 U	1100	4	0.9 B	0.5 U	25 U
1,1,1-Trichloroethane	*[5280]*	0.5 U	940	0.8 U	0.5 U	0.5 U	130
1,1,2-Trichloroethane	*[41.8]*	0.5 U	500 U	0.8 U	0.5 U	0.5 U	25 U
Trichloroethene	*[80.7]*	0.5 U	500 U	4	10	0.5 U	25 U
Semi-Volatile Organic Compounds							
Bis (2-ethylhexyl) phthalate	*[50000]*	4 J	1 J	1 J	1 J	4 J	10 U
Di-n-butyl phthalate	*[154000]*	10 U	11 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	*[763]*	10 U	26	2 J	10 U	10 U	10 U
Diethyl Phthalate	*[52100]*	10 U	3 J	10 U	10 U	10 U	10 U
Naphthalene	*[620]*	10 U	14	10 U	10 U	10 U	10 U
Phenol	*[570]*	10 U	870 D	29 U	16	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
D - Compound quantitated on a diluted sample
BRL - Below Reporting Limit

TABLE C-2 (cont.)
Analytical Results for Ground Water Samples
Enviro-Chem Off-Site Till Monitoring Wells
Fourth Quarter 1998

LOCATION		T-5	T-6	T-7	T-8	T-9	T-10
ENVIRON SAMPLE ID		ECTGW5-01	ECTGW6-01	ECTGW7-01	ECTGW8-01	ECTGW9-01	ECTGW10-01
COLLECTION METHOD		BAILER	BAILER	BAILER	BAILER	BAILER	BAILER
COLLECTION DATE		11/9/98 TO 11/12/98	11/9/98	11/10/98	11/10/98 TO 11/11/98	11/12/98	11/11/98
COMMENTS							
Polychlorinated biphenyls							
Aroclor 1016	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1221	*[.00079]*	2 U	2 U	2 U	2 U	2 U	2 U
Aroclor 1232	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1242	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1248	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1254	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1260	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Inorganics							
Arsenic	*[0.0175]*	2.3 B	25.9 B	3.5 B	1.7 U	1.7 U	6.9 B
Hexavalent Chromium	*[11]*	10 BRL	10 BRL	10 BRL	10 BRL	10 BRL	10 BRL
Lead	*[10]*	0.7 U	0.7 U	0.88 B	1.1 B	0.7 U	0.84 B
Nickel	*[100]*	1.4 B	43	6.8	3.7 B	14.8 B	20.7
Zinc	*[47]*	1.5 U	1.5 U	1.5 U	1.5 U	11.9 U	1.5 U
Cyanide (Total)	*[5.2]*	10 U*	10 U*	10 U*	10 U*	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
D - Compound quantitated on a diluted sample
BRL - Below Reporting Limit
* - Cyanide sample field filtered

TABLE C-3
Analytical Results for Ground Water Samples
Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1998

LOCATION		S-1	S-1	S-2	S-2	S-3	S-3
ENVIRON SAMPLE ID		ECSGW1-01	ECSGW1-01 M	ECSGW2-01	ECSGW2-01 M	ECSGW3-01	ECSGW3-01 D
COLLECTION METHOD		PUMP	PUMP	PUMP	PUMP	PUMP	PUMP
COLLECTION DATE		11/12/98	11/12/98	11/12/98	11/12/98	11/12/98	11/12/98
COMMENTS			DUPLICATE		DUPLICATE		DUPLICATE
Volatile Organic Compounds							
Vinyl Chloride	*[525]*	0.5 U	NS	3	NS	0.5 U	0.5 U
1,1-Dichloroethene	*[1.85]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
Methylene Chloride	*[15.7]*	2 B	NS	2 B	NS	2 B	2 B
1,2-Dichloroethene (TOTAL)	*[1.85]*	0.5 U	NS	3	NS	0.5 U	0.5 U
Ethylbenzene	*[3280]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
Tetrachloroethene	*[8.85]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
Toluene	*[3400]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
1,1,1-Trichloroethane	*[5280]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
1,1,2-Trichloroethane	*[41.8]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
Trichloroethene	*[80.7]*	0.5 U	NS	0.5 U	NS	0.5 U	0.5 U
Semi-Volatile Organic Compounds							
Bis (2-ethylhexyl) phthalate	*[50000]*	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	*[154000]*	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	*[763]*	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl Phthalate	*[52100]*	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	*[620]*	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	*[570]*	10 U	10 U	10 U	10 U	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
E - Estimated due to interference
BRL - Below Reporting Limit
NS - Not Sampled

TABLE C-3 (cont.)
Analytical Results for Ground Water Samples
Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1998

LOCATION		S-1	S-1	S-2	S-2	S-3	S-3
ENVIRON SAMPLE ID		ECSGW1-01	ECSGW1-01 M	ECSGW2-01	ECSGW2-01 M	ECSGW3-01	ECSGW3-01 D
COLLECTION METHOD		PUMP	PUMP	PUMP	PUMP	PUMP	PUMP
COLLECTION DATE		11/12/98	11/12/98	11/12/98	11/12/98	11/12/98	11/12/98
COMMENTS			DUPLICATE		DUPLICATE		DUPLICATE
Polychlorinated biphenyls							
Aroclor 1016	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1221	*[.00079]*	2 U	2 U	2 U	2 U	2 U	2 U
Aroclor 1232	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1242	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1248	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1254	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1260	*[.00079]*	1 U	1 U	1 U	1 U	1 U	1 U
Inorganics							
Arsenic	*[0.0175]*	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Hexavalent Chromium	*[11]*	10 BRL	10 BRL	10 BRL	10 BRL	10 BRL	10 BRL
Lead	*[10]*	0.81 B	0.7 U	0.7 U	0.7 U	0.7 U	0.76 B
Nickel	*[100]*	0.7 U	0.7 U	4 B	3.8 B	2.3 B	2.2 B
Zinc	*[47]*	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Cyanide (Total)	*[5.2]*	10 U	10 U	10 U	10 U	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
E - Estimated due to interference
BRL - Below Reporting Limit
NS - Not Sampled

TABLE C-3 (cont.)
Analytical Results for Ground Water Samples
Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1998

LOCATION		S-4	S-4D	MW-13
ENVIRON SAMPLE ID		ECSGW4-01	ECSGW4D-01	ECTGWMW13-01
COLLECTION METHOD		PUMP	PUMP	BAILER
COLLECTION DATE		11/12/98	11/11/98	11/12/98
COMMENTS				
Volatile Organic Compounds				
Vinyl Chloride	*[525]*	0.5 U	0.5 U	1 U
1,1-Dichloroethene	*[1.85]*	0.5 U	0.5 U	1 U
Methylene Chloride	*[15.7]*	2 B	3 B	3 B
1,2-Dichloroethene (TOTAL)	*[1.85]*	0.5 U	1	**46**
Ethylbenzene	*[3280]*	0.5 U	0.5 U	3
Tetrachloroethene	*[8.85]*	0.5 U	0.5 U	1 U
Toluene	*[3400]*	0.5 U	0.5 U	0.5 J
1,1,1-Trichloroethane	*[5280]*	0.5 U	0.5 U	2
1,1,2-Trichloroethane	*[41.8]*	0.5 U	0.5 U	1 U
Trichloroethene	*[80.7]*	0.5 U	0.5 U	1 U
Semi-Volatile Organic Compounds				
Bis (2-ethylhexyl) phthalate	*[50000]*	10 U	10 U	10 U
Di-n-butyl phthalate	*[154000]*	10 U	10 U	10 U
1,2-Dichlorobenzene	*[763]*	10 U	10 U	10 U
Diethyl Phthalate	*[52100]*	10 U	10 U	10 U
Naphthalene	*[620]*	10 U	10 U	10 U
Phenol	*[570]*	10 U	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
E - Estimated due to interference
BRL - Below Reporting Limit
NS - Not Sampled

TABLE C-3 (cont.)
Analytical Results for Ground Water Samples
Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1998

LOCATION		S-4	S-4D	MW-13
ENVIRON SAMPLE ID		ECSGW4-01	ECSGW4D-01	ECTGWMW13-01
COLLECTION METHOD		PUMP	PUMP	BAILER
COLLECTION DATE		11/12/98	11/11/98	11/12/98
COMMENTS				
Polychlorinated biphenyls				
Aroclor 1016	*[.00079]*	1 U	0.95 U	1 U
Aroclor 1221	*[.00079]*	2 U	1.9 U	2 U
Aroclor 1232	*[.00079]*	1 U	0.95 U	1 U
Aroclor 1242	*[.00079]*	1 U	0.95 U	1 U
Aroclor 1248	*[.00079]*	1 U	0.95 U	1 U
Aroclor 1254	*[.00079]*	1 U	0.95 U	1 U
Aroclor 1260	*[.00079]*	1 U	0.95 U	1 U
Inorganics				
Arsenic	*[0.0175]*	1.7 U	1.7 U	**8.4** B
Hexavalent Chromium	*[11]*	10 BRL	10 BRL	10 BRL
Lead	*[10]*	0.7 U	0.7 U	0.7 U
Nickel	*[100]*	0.7 U	0.84 B	14
Zinc	*[47]*	1.5 U	1.5 U	26.5
Cyanide (Total)	*[5.2]*	10 U	10 U*	10 U*

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
* Cynanide sample field filtered
E - Estimated due to interference
BRL - Below Reporting Limit
NS - Not Sampled

TABLE C-4
Analytical Results for Surface Water Samples
Unnamed Ditch
Fourth Quarter 1998

LOCATION		SW-1	SW-2	SW-2
ENVIRON SAMPLE ID		ECSW101	ECSW201	ECSW201D
COLLECTION METHOD		SAMPLE BOTTLE	SAMPLE BOTTLE	SAMPLE BOTTLE
COLLECTION DATE		11/11/98	11/11/98	11/11/98
COMMENTS				DUPLICATE
Volatile Organic Compounds				
Vinyl Chloride	*[525]*	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	*[1.85]*	0.5 U	0.5 U	0.5 U
Methylene Chloride	*[15.7]*	1 B	2 B	1 B
1,2-Dichloroethene (TOTAL)	*[1.85]*	0.5 U	0.5 J	0.3 J
Ethylbenzene	*[3280]*	0.5 U	0.5 U	0.5 U
Tetrachloroethene	*[8.85]*	0.5 U	0.5 U	0.5 U
Toluene	*[3400]*	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	*[5280]*	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	*[41.8]*	0.5 U	0.5 U	0.5 U
Trichloroethene	*[80.7]*	0.5 U	0.5 U	0.5 U
Semi-Volatile Organic Compounds				
Bis (2-ethylhexyl) phthalate	*[50000]*	10 U	10 U	10 U
Di-n-butyl phthalate	*[154000]*	10 U	10 U	10 U
1,2-Dichlorobenzene	*[763]*	10 U	10 U	10 U
Diethyl Phthalate	*[52100]*	10 U	10 U	10 U
Naphthalene	*[620]*	10 U	10 U	10 U
Phenol	*[570]*	10 U	10 U	10 U

Notes: All concentrations are in ug/L
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
D - Compound quantitated on a diluted sample
BRL - Below Reporting Limit

TABLE C-4 (cont.)
Analytical Results for Surface Water Samples
Unnamed Ditch
Fourth Quarter 1998

LOCATION	SW-1	SW-2	SW-2
ENVIRON SAMPLE ID	ECSW101	ECSW201	ECSW201D
COLLECTION METHOD	SAMPLE BOTTLE	SAMPLE BOTTLE	SAMPLE BOTTLE
COLLECTION DATE	11/11/98	11/11/98	11/11/98
COMMENTS			DUPLICATE
Polychlorinated biphenyls			
Aroclor 1016 *[0.00079]*	1 U	1 U	1 U
Aroclor 1221 *[0.00079]*	2 U	2 U	2 U
Aroclor 1232 *[0.00079]*	1 U	1 U	1 U
Aroclor 1242 *[0.00079]*	1 U	1 U	1 U
Aroclor 1248 *[0.00079]*	1 U	1 U	1 U
Aroclor 1254 *[0.00079]*	1 U	1 U	1 U
Aroclor 1260 *[0.00079]*	1 U	1 U	1 U
Inorganics			
Arsenic *[0.0175]*	1.7 U	2.1 B	2.1 B
Hexavalent Chromium *[11]*	10 BRL	10 BRL	10 BRL
Lead *[10]*	0.7 U	0.7 U	0.7 U
Nickel *[100]*	15.9 U	13.5 U	14 U
Zinc *[47]*	1.5 U	1.5 U	1.5 U
Cyanide (Total) *[5.2]*	10 U	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
D - Compound quantitated on a diluted sample
BRL - Below Reporting Limit

TABLE C-5
Analytical Results for Quality Assurance / Quality Control Samples
Fourth Quarter 1998

TYPE		TRIP BLANK	TRIP BLANK	FIELD BLANK	FIELD BLANK
ENVIRON SAMPLE ID		ECTGW5-01 T	ECSGW4D-01 T	ECTGW8-01 B	ECSGW4-01 B
COLLECTION METHOD				BAILER	PUMP
COLLECTION DATE		11/9/98	11/11/98	11/12/98	11/12/98
Volatile Organic Compounds					
Vinyl Chloride	*[2]*	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	*[7]*	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	*[3,500]*	2 U	3 B	9 U	4 B
Methylene Chloride	*[4.7]*	3 B	2 B	3 B	2 B
1,2-Dichloroethene (TOTAL)	*[70]*	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	*[680]*	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	*[0.69]*	**2**	0.5 U	0.5 U	0.5 U
Toluene	*[2,000]*	0.4 JB	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	*[200]*	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	*[0.61]*	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	*[5]*	2	0.5 U	0.5 U	0.5 U
Xylenes (Total)	*[10,000]*	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone	*[1,750]*	2 U	2 U	2 U	2 U
2-Butanone	*[170]*	2 U	2 U	2 U	2 U
Semi-Volatile Organic Compounds					
Bis (2-ethylhexyl) phthalate	*[2.5]*	NS	NS	10 U	10 U
Di-n-butyl phthalate	*[3,500]*	NS	NS	10 U	10 U
1,2-Dichlorobenzene	*[600]*	NS	NS	10 U	10 U
Diethyl Phthalate	*[28,000]*	NS	NS	10 U	10 U
Isoporone	*[8.5]*	NS	NS	10 U	10 U
Naphthalene	*[14,000]*	NS	NS	10 U	10 U
Phenol	*[1,400]*	NS	NS	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
D - Compound quantitated on a diluted sample
BRL - Below Reporting Limit

TABLE C-5 (cont.)
Analytical Results for Quality Assurance / Quality Control Samples
Fourth Quarter 1998

TYPE		TRIP BLANK	TRIP BLANK	FIELD BLANK	FIELD BLANK
ENVIRON SAMPLE ID		ECTGW5-01 T	ECSGW4D-01 T	ECTGW8-01 B	ECSGW4-01 B
COLLECTION METHOD				BAILER	PUMP
COLLECTION DATE		11/9/98	11/11/98	11/12/98	11/12/98
Polychlorinated biphenyls					
Aroclor 1016	*[0.0045]*	NS	NS	0.95 U	1 U
Aroclor 1221	*[0.0045]*	NS	NS	1.9 U	2 U
Aroclor 1232	*[0.0045]*	NS	NS	0.95 U	1 U
Aroclor 1242	*[0.0045]*	NS	NS	0.95 U	1 U
Aroclor 1248	*[0.0045]*	NS	NS	0.95 U	1 U
Aroclor 1254	*[0.0045]*	NS	NS	0.95 U	1 U
Aroclor 1260	*[0.0045]*	NS	NS	0.95 U	1 U
Inorganics					
Antimony	*[14]*	NS	NS	1.7 U	1.7 U
Arsenic	*[50]*	NS	NS	1.7 U	1.7 U
Barium	*[1,000]*	NS	NS	0.58 B	0.4 U
Beryllium	*[4]*	NS	NS	0.2 U	0.39 B
Cadmium	*[10]*	NS	NS	1 U	1 U
Hexavalent Chromium	*[50]*	NS	NS	10 BRL	10 BRL
Lead	*[50]*	NS	NS	0.7 U	0.7 U
Manganese	*[7,000]*	NS	NS	0.2 U	0.93 E
Nickel	*[150]*	NS	NS	0.7 U	0.7 U
Silver	*[50]*	NS	NS	0.4 U	0.4 U
Tin	*[21,000]*	NS	NS	4.7 U	4.7 U
Vanadium	*[245]*	NS	NS	0.4 U	0.4 U
Zinc	*[7,000]*	NS	NS	1.5 U	1.5 U
Cyanide (Total)	*[154]*	NS	NS	10 U	10 U

Notes: All concentrations are in ug/L.
Concentrations in bold exceed the Acceptable Stream Concentrations.
B - Analyte was also detected in the blank (organic) or value is <CRDL but >=IDL (inorganic)
[2] - Acceptable Stream Concentrations.
U - Compound was not detected.
J - Estimated Value
D - Compound quantitated on a diluted sample
BRL - Below Reporting Limit